United States
Department of
Agriculture

Soil
Conservation
Service

In cooperation with
Cornell University
Agricultural Experiment
Station

Soil Survey of Albany County, New York

How To Use This Soil Survey

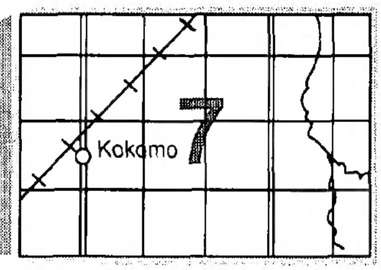
General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

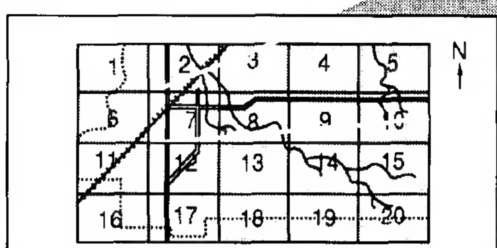
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.



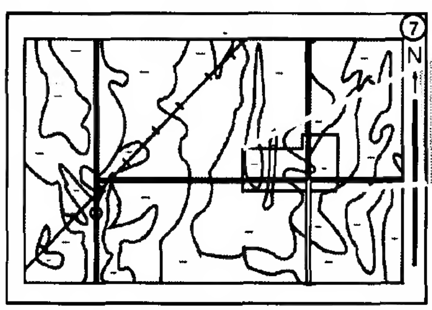
MAP SHEET

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.

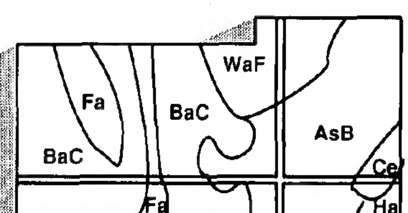


INDEX TO MAP SHEETS

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET



AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1983. Soil names and descriptions were approved in 1983. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1983. This survey was made cooperatively by the Soil Conservation Service and the Cornell University Agricultural Experiment Station. It is part of the technical assistance furnished to the Albany County Soil and Water Conservation District. Partial funding for this survey was provided by the Albany County Legislature through the Albany County Soil and Water Conservation District. Funding was also provided by the New York State Department of Agriculture and Markets.

Cover: Cropland and pasture intermingled with woodland near the town of Coeymans. The cropland in the foreground is on Burdett soils. The depressional area adjacent to the fence in the center is a flood plain of Wayland soils. The steep, forested hillside in the background is Arnot and Nunda soils.

Contents

Issued June 1992

Index to Map Units

Summary of Tables

Foreword

This soil survey contains information that can be used in land-planning programs in Albany County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Paul A Dodd

Paul A. Dodd
State Conservationist
Soil Conservation Service

Soil Survey of
Albany County, New York

By James H. Brown, Soil Conservation Service

Fieldwork by William A. Broad, James H. Brown, Marilyn C. Stephenson, Robert J. Landry, C. Erwin Rice, Gerald L. Rosenburg, Carla H. Swick, Theodore D. Trevail, and Ralph Work, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service,
in cooperation with
Cornell University Agricultural Experiment Station

ALBANY COUNTY is on the west side of the Hudson River in the eastern part of New York State (fig. 1). It is approximately 130 miles north of New York City. East of the Hudson River is Rensselaer County. The Mohawk River and Saratoga and Schenectady Counties are north of Albany County, Schoharie County is to the west, and Greene County is to the south.

The county is roughly rectangular. It is 20 miles wide east to west, between the Hudson River and the Schoharie County line, and 35 miles deep north to south, between Greene and Schenectady Counties. The total area of Albany County is 527 square miles, or 339,840 acres. The city of Albany is both the county seat and the capital of the State of New York.

According to the 1983 Census of Agriculture, about 27.2 percent of the land area of the county, or 92,400 acres, is in farms *(20)*. Of this total, about 50,100 acres is in crops, 20,300 acres is in pasture, and 22,000 acres is woodland and other land in farms.

Land use changed dramatically during the period from 1959 to 1983. A large acreage that was farmed in 1959 was taken out of production. Much of it is brushland. A considerable acreage, particularly in the eastern half of the county, consists of urban areas and scattered operating farms.

Dairy farming has decreased considerably in the county but is still important. Part-time farming has increased in recent years. Large acreages in farms are rented for continued production.

Specialty crops, such as sweet corn, vegetables, and fruit, are grown on large acreages of alluvial land and in the sand and clay deposits of "Old Albany Lake." This was a glacial lake that extended from the Hudson River west to the Watervliet Reservoir areas.

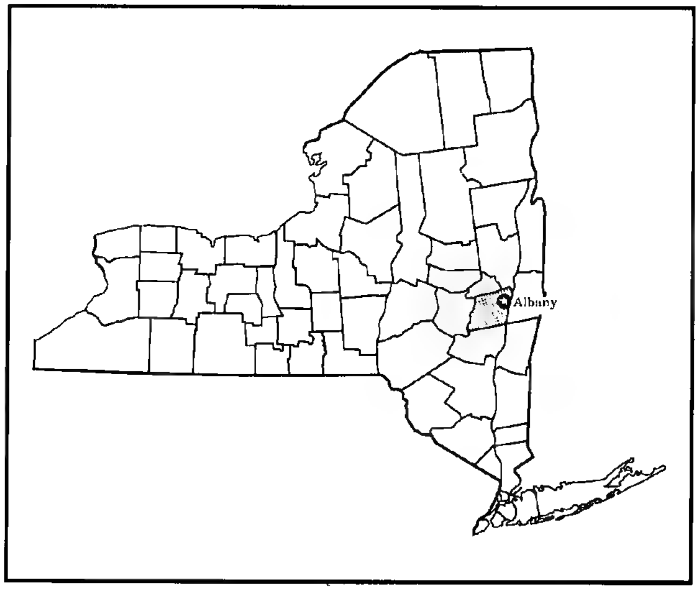


Figure 1.—Location of Albany County in New York.

Large areas of forest are west of the Helderberg escarpment, which rises abruptly just west of Ravenna and extends in a north-south direction, north of

Altamont. Many wooded areas have been cut and reforested.

General Nature of the County

General information about the settlement and development, industry and transportation, physiography and geology, drainage, water supply, and climate of Albany County is given in this section.

Settlement and Development

Settlement of Albany County began as early as 1614, after Henry Hudson explored the Hudson River in 1609 *(13)*. The Dutch called the area the "New Netherlands." In 1630, a pearl and diamond merchant, Killian Van Rensselaer, under the patroon system continued settlement of an area known as Rensselaerwyck. This area encompassed present-day Albany and Rensselaer Counties and part of Columbia and Schenectady Counties. The area prospered and grew under the Dutch system of land-lease tenures and rent payments.

Albany County took in both sides of the Hudson River northward from Ulster and Dutchess Counties, including the city and the whole manor of Rensselaerwyck, along with Schenectady. On the west side the county reached to Saratoga Creek; on the east side its northern limits were undefined *(13)*.

Much of Albany County east of the towns of Westerlo, Berne, and Knox was cultivated or overgrazed. In these areas the surface soil was not protected, and large areas of sloping and rolling land were eroded. In the four western towns, cultivated areas were eroded but the farms there generally were managed better. The anti-rent wars, which began around 1765, extended the leases on the farms.

In 1683, Albany County was incorporated. By 1686, the city of Albany was divided, and by 1895, the county was the same as it is now, with 10 towns, 6 villages, and 3 cities *(13)*.

Densely populated suburbs surround the cities of Albany, Cohoes, and Watervliet, but the rest of the county is generally sparsely populated. Commuters to urban centers have been moving into some villages. The population of the county in 1930 was estimated at 127,412, and in 1980 it was 298,465 *(20)*.

Industry and Transportation

The Hudson River provided transportation, easy access to markets, power, and communication for the early settlers in the area. Industry gradually developed near the river. Locally grown farm produce and fur were shipped via the Hudson River to urban areas of the Eastern Seaboard. Small milling operations soon were used to process farm and forest products. The population and the commercial base grew, along with the economy of the Hudson-Mohawk River confluence at Albany. The Albany area thus gave rise in the early 1800's to the manufacturing, transportation, and employment centers of the county.

Albany County has a long history of manufacturing. Iron and steel manufacture and fabrication in the cities of Albany, Cohoes, and Watervliet began early and thrived on the readily available and convenient water power. Excellent water, rail, and highway transportation enhanced the growth of industry and commerce. Chemicals, textiles, drugs, and paper comprise the industrial base and the employment opportunities today.

The City of Albany is a port terminal at the northwest port limit of the tidewater channel on the Hudson River. It is at the eastern terminus of the New York State Barge Canal from Lake Erie and Lake Ontario. It is also the southern terminus of the Champlain Division of the canal system that takes barge traffic north to Montreal.

Albany County is a major rail hub to the Northeast. The railroad transportation operators are Delaware and Hudson, Conrail, and Amtrak. These lines and connections provide services to New York City and other points south, Boston and other points east, Montreal and other points north, and Syracuse and other points west.

In Albany County, a network of state and federal highways provides convenient travel. Interstate highways connect the City of Albany to the surrounding region. These include I-90, which runs west and east, I-87, which runs north and south, and I-787.

Physiography and Geology

Robert J. Dineen, senior scientist, geology, New York State Geological Survey, helped to prepare this section.

Albany County, located in the east-central part of New York, contains parts of two major physiographic regions *(5)*. The northeastern half of the county lies within the Hudson-Mohawk Lowlands. The southwestern half lies within the Helderberg Mountain section of the Appalachian Uplands. Elevations range from mean sea level (m.s.l.) along the Hudson River at Port of Albany to 2,180 feet above m.s.l. at Cheese Hill. The average elevation of the Hudson Valley Lowlands is 300 feet above m.s.l. It gradually increases to about 880 feet above m.s.l. at its western edge at Settles Hill.

Bozen Kill, Normans Kill, Vloman Creek, and Coemans Creek are incised into the Hudson Valley Lowlands *(11)*. The lowlands have very little relief but rise in elevation and become more rugged westward near the Helderberg escarpment. This escarpment

marks the boundary with the Helderberg Mountains.

The Helderberg Mountains consist of a series of cuestas that have steep, north-northeast slopes and gentle, southwest slopes. They rise abruptly from 400 feet above m.s.l. to 1,300 feet above m.s.l. along the Helderberg escarpment at Altamont. Many secondary escarpments are scattered throughout the Helderberg Mountains. These include the Copeland Hill-Wolf Hill escarpment at Clarksville and the Scott-Patent Hill escarpment at Preston Hollow. Several deep, steep-walled, through valleys cut across the cuestas. They include those of the Switz Kill and the Potic, Eight Mile, and Ten Mile Creeks. Broad, nearly flat areas that have elongated hills known as drumlins lie between the creeks. The creeks in the area include Fox Creek, Hannacrois Creek, and Catskill Creek. Catskill Creek and its tributaries cut as deep as 500 feet in the Helderberg Mountains.

The bedrock formations of Albany County range in age from Middle Ordovician (475 million years ago) to Middle Devonian (375 million years ago). The formations beneath the lowlands are Ordovician in age, and those in the Helderberg Mountains are Devonian in age.

The oldest Ordovician rocks are the intensely folded strata of the Normanskill Formation (On) of the Trenton Group (see the General Geology Map at the back of this survey) *(5, 12)*. The Normanskill Formation consists of gray, impure sandstones (graywackes), the Austin Glen Formation, and the Mount Merino Formation, which contains underlying shales that have greenish cherts. These units form bedrock ridges that overlook the western shore of the Hudson River. The Normanskill Formation consists of fault blocks that have been thrust over the younger Snake Hill Shale (Osh), which is a band of black shale that underlies the central part of the Hudson Lowlands subprovince. A thick accumulation of glacial lake clay generally obscures the Snake Hill Shale. West of and overlying Snake Hill Shale is the youngest of the Ordovician rocks, the Schenectady Formation (Osc), which consists of relatively undeformed gray sandstones and shales. This formation covers a broad area in the northern part of the county. The rocks of this formation are exposed along the low-lying Settles Hill-Voorheesville-Ravena cuesta.

The Devonian rocks crop out in the southwestern half of the county, in and above the Helderberg escarpment. The Helderberg Group (Dhg) is Lower Devonian in age. It consists of limestone that forms the prominent cliffs of the Helderberg escarpment and Diamond Hill. The Helderberg Group is a narrow band extending from the northwestern part to the southeastern part of the county and consists of Becraft, Coeymans, Kalkberg, and Manlius Limestone and Rondout Dolomite. Rocks of the Helderberg Group are highly fossiliferous and were deposited as lime muds and sands in a warm, shallow sea.

The Onondaga Limestone of the Schoharie Formation (Dou) is Middle Devonian in age. It includes shales, limestones, sandstones, and Esopus Shale. Esopus Shale is not fossiliferous and forms a prominent bench behind the Helderberg escarpment. The other rocks from this formation are fossiliferous and have many corals. They underlie Fox Creek Valley and form a low bench in the Onesquethaw and Hannacrois Valleys.

The Lower Hamilton Group (Dhm) consists of the most extensive rocks of Devonian age. It overlies the Onondaga Limestone, Schoharie Formation. The Copeland Hill-Wolf Hill, Irish Hill, and West Mountain escarpments formed in the dark gray, thick-bedded, fossiliferous sandstones and shales of the Lower Hamilton Group.

The Kiskatom Formation (Dha) is the youngest rock formation in the county. It is in the southwestern part of the county. Cheese Hill and Scotts Patent Hill consist of the thick, red sandstones and shale beds of the Kiskatom Formation. The distinctive red color of Kiskatom rocks contrasts with the dark gray rocks of the Lower Hamilton Group. The color and other characteristics indicate that a river system deposited the red beds. Dark gray sediment accumulated near shore in a shallow sea in the formation of the Lower Hamilton Group (Dhm). The sandstone beds of the Kiskatom Formation are resistant to erosion and form small, prominent benches throughout their outcrop belt. The sandstone beds become thicker and form higher benches in the more southerly parts of the county.

During the last million years at least four major advances of glacial ice covered Albany County *(6, 8)*. The latest was the Wisconsinan Glaciation, which covered the area from 70,000 to 16,000 years ago and was more than a mile thick. Each ice sheet plowed southwestward across the Helderberg Mountains. It bulldozed and transported the soil and the rock debris that the previous ice advances left. Then it deposited a mosaic of glacial tills and stratified sediments during its retreat.

Till is the most common type of glacial deposit in the county *(6)*. The glacier rarely carried debris more than 5 miles; consequently, the color, composition, and texture of the till generally resemble those of the underlying bedrock. For example, the till-derived, reddish Lackawanna-Morris-Wellsboro soils that overlie the red Kiskatom Formation are in the southwest corner of the county. These soils were derived from compact lodgement till that was molded into streamlined hills called drumlins under the advancing glacier. The dark

gray shales and sandstones of the Lower Hamilton Group are the source rock for the gray to brown glacial till of the Lordstown-Kearsarge-Arnot soils. The Lordstown-Kearsarge-Arnot soils formed, in the Helderberg Mountains, in the exceptionally thick tills deposited on the back slopes of cuestas and from the thin tills draped on escarpments. These silty, sandy tills are the result, in part, of the large numbers of thick sandstone beds in the Lower Hamilton Group and of the accumulation of semi-washed, loose ablation till on top of the dying, stagnant glacier. The higher clay content of the Lower Hamilton Group and of the Schenectady Formation controls the high clay content of the Nunda-Burnett soils. The limey Farmington-Wassaic soils formed in weathered, lime-rich tills overlying the Onondaga and Helderberg limestones.

The compact, impermeable, till-derived soils contrast strongly with the Chenango-Valois soils, which derived from loose, permeable, ice-contact, stratified drift deposits. Chenango-Valois soils outline sand-and-gravel-rich kame moraine and glacial outwash systems at Westerlo, Voorheesville, and Guilderland Center. The kame moraines were deposited along the ice margin during hesitations in the retreat of the glacier. Meltwater rivers flowing away from the glacier deposited glacial outwash. The Chenango-Valois soils covering a large area at South Bethlehem formed in a large delta that was deposited in Glacial Lake Albany.

Glacial Lake Albany covered the eastern third of the county from about 16,000 to 12,600 years ago *(11)*. The Hudson-Rhinebeck, Scio-Elmridge, and Colonie-Elnora soils formed in deposits from Glacial Lake Albany. Hudson-Rhinebeck soils formed in weathered, deepwater and lake bottom silts and clays. Scio-Elmridge soils developed in the sands and silts of the lake margin in shallow water and near shore. Colonie-Elnora soils are weathering products of the windblown sand that spread across the lake bottom as the lake dried up.

The Hamlin-Teel soils are on the Hudson River flood plain. The flood plain, which is less than 6,000 years old, was deposited in the Hudson River estuary.

Drainage

The major trunk streams in Albany County are the Hudson River and its main tributary, the Mohawk River *(4)*. The Hudson River is a tidal estuary as far north as Troy. The Mohawk River flows across a ridge of the Austin Glen Formation, which created the Cohoes Falls. It enters the Hudson River below the falls. In Albany County, most of the tributaries to the Hudson River cut across Austin Glen ridges as they enter the river. These ridges are the west wall of the preglacial Battenkill-Hudson River Valley, whose headwaters were in the Taconic Mountains.

Lisha Kill, Patroon Creek, middle and lower Normans Kill, Vloman Kill, Coeymans Creek, and their tributaries form an entrenched dendritic drainage system across the Lake Albany clay plain. The Bozen Kill and the upper Normans Kill follow belts of easily eroded shale. Black Creek is a glacially deranged or blocked stream; that is, it no longer follows its preglacial drainage course. The streams in the Helderberg Mountains form a rectangular drainage pattern; the southwest-northeast joint system in the rocks of the Helderberg Group control this pattern. The tributaries of Catskill Creek also form a rectangular drainage system that follows the joint systems and the dip of the Hamilton Group bedrock. Parts of the Onesquenthaw, Hannacrois, and Catskill Creeks follow the strike of the bedrock of the Helderberg Mountains; the Switz Kill flows opposite to the dip of the rocks of the Hamilton Group. Most of these streams are tributaries to the Hudson River. Fox Creek and the Switz Kill are exceptions; they enter Schoharie Creek.

Water Supply

The county's water supply is obtained from both surface reservoirs and subsurface aquifers. The main surface-water sources are the Alcove, Basic, Watervliet, and Vly Reservoirs; the main subsurface sources are the deep glacial aquifers in the Hudson and Catskill Valleys and the shallow glacial aquifers in the area commonly called the Pine Bush, river flood plains, and till-covered areas *(4)*. Ground water also has been found in wells drilled into bedrock throughout the county, although the water quality and amounts vary widely. Generally, when drilling in bedrock, the hammer-drilled wells tend to yield more than rotary-drilled wells.

Three major preglacial buried river valleys underlie the clays of the Hudson Valley *(10)*. They are, from east to west, the Battenkill-Hudson, Colonie, and Mohawk channels. The modern Hudson River occupies the Battenkill-Hudson channel. The 20 to 50 feet of silty sands from flood plains filling that channel are a poor aquifer because of their fine texture and contamination from the Hudson River. The buried Colonie and Mohawk channels, located between Albany and Voorheesville, are filled mainly with clay and, in some areas, with occasional discontinuous masses of ice-contact sand and gravel. The clay is a poor aquifer, but some sand and gravel lenses produce high-yield water wells.

Several large masses of sand and gravel underlie the thick till draped over the north wall of the Catskill Valley *(4)*. These have good potential as aquifers. The till

generally is a poor aquifer, although large-diameter, dug wells often yield enough water for domestic use. These dug wells are shallow, however, and susceptible to surface water pollution.

The sand of the Pine Bush, kame moraines at Guilderland Center, Voorheesville, and Westerlo, and outwash in the tributaries to Catskill Creek are all good near-surface aquifers. Springs provide water along the edge of the Helderberg escarpment.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Albany, New York, in the period 1951 to 1978. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter, the average temperature is 24 degrees F and the average daily minimum temperature is 15 degrees. The lowest temperature on record, which occurred at Albany on January 19, 1971, is -28 degrees. In summer, the average temperature is 69 degrees and the average daily maximum temperature is 81 degrees. The highest recorded temperature, which occurred at Albany on July 18, 1953, is 100 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 36 inches. Of this, 19 inches, or about 53 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 15 inches. The heaviest 1-day rainfall on record was 3.5 inches at Albany on August 28, 1986. Thunderstorms occur on about 30 days each year.

The average seasonal snowfall is 67 inches. The greatest snow depth at any one time during the period of record was 36 inches. On the average, 44 days of the year have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in mid afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 40 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 10 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material has few or no roots or other living organisms and has been changed very little by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes

are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties *(3)*. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. These latter soils are called inclusions or included soils.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soil on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data *(3)*. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

An earlier soil survey of Albany County was published in 1942 *(14)*. The current soil survey updates the earlier one and provides additional information and larger scale maps that show the soils in greater detail.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in another unit but in a different pattern *(7)*.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of soils suitable for a particular land use can be identified on the map. Areas of soils that are not suitable for a particular use can also be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that effect use and management.

The general soil map units in Albany County are described on the following pages. The textural terms in the descriptive headings of each unit refer to the surface layer of the major soils. Some map units include soils that are on greater or lesser slopes than those given in the headings. These units give the range of slope of the included soils.

General soil maps have been published for two counties adjacent to Albany County, namely, Schenectady and Schoharie Counties, New York.

The names of adjoining map units in these three counties are not exactly the same because proportions of major soils differ from one survey area to another. The maps do not join perfectly because of the difference in the scale of maps in the three survey areas. Also, the concepts and names of some soil series have changed as a result of changes in the classification system since the publication of Schenectady and Schoharie Counties.

Soil Descriptions

Areas Dominated by Soils Formed in Glacial Till

The four general soil map units in this group make up about 67 percent of the acreage in the county. The soils in these units formed mostly in very deep to shallow glacial till deposits derived from limestone, shale, or sandstone. The soils range from gently sloping to very steep and are mostly moderately well drained or somewhat poorly drained. In many areas the soils are deep and have suitable slopes for use in crop production associated with dairy farms. In areas where the soils are shallow to bedrock or have numerous large stones on the surface, rock outcrops, or steep slopes, the soils are used mostly as forest land or brushland.

1. Nunda-Burdett

Dominantly nearly level to steep, moderately well drained and somewhat poorly drained, medium textured, very deep soils; on uplands

The soils in this map unit formed in very deep glacial till deposits. The landscape consists of ridges, hilltops, and hillsides interspersed with lower, flat areas. Slope ranges from 0 to 35 percent.

This unit is the largest in the county and makes up about 35 percent of the county. It is about 40 percent Nunda soils, 20 percent Burdett soils, and 40 percent soils of minor extent.

The gently sloping to steep Nunda soils are on the sides and tops of ridges where bedrock is at a depth of more than 5 feet. These soils are very deep and moderately well drained. Permeability is moderate in the surface layer and the upper part of the subsoil and slow or very slow in the lower part of the subsoil and the substratum. The seasonal high water table is at a depth of 18 to 24 inches for very brief periods in spring.

The nearly level to strongly sloping Burdett soils are on the flat and lower part of the sidehills and ridges where the bedrock is at a depth of more than 5 feet. These soils are somewhat poorly drained. Permeability is moderate in the surface and the subsurface layers and slow in the subsoil and substratum. The seasonal high water table is at a depth of ½ foot to 1½ feet from November to May.

The soils of minor extent are Ilion, Angola, Wassaic, Farmington, and Valois soils. The poorly drained Ilion soils formed in the same kind of glacial till deposits as Nunda and Burdett soils but are on the lower parts of

the landscape and in depressions that receive runoff from higher, adjacent soils. Angola soils are similar to Burdett soils but are 20 to 40 inches deep over bedrock. Wassaic soils are similar to Nunda soils but are 20 to 40 inches deep over limestone bedrock. Farmington soils are shallow to limestone bedrock. The well drained Valois soils are on moderately steep slopes and are along lower valley sides.

In many areas the soils of this unit are farmed. Other areas are woodland or brushland. Generally, the soils are suited to crops, hay, and pasture on dairy farms in the area. The irregular topography, steep slopes, seasonal high water table, surface stones, and depth to bedrock in some areas are the main limitations for cultivated crops.

The seasonal high water table and the permeability in the Nunda and Burdett soils limit use of these soils for community development. In most areas potential is good for use as wildlife habitat and woodland.

2. Farmington-Wassaic

Dominantly nearly level to very steep, somewhat excessively drained to moderately well drained, medium textured, shallow to moderately deep soils over limestone; on uplands of the Helderberg Mountain range

The soils in this map unit formed in shallow and moderately deep, glacial till deposits derived mainly from limestone. The landscape consists of flat and broad, undulating areas that have short, steep ridges or rolling plains. Some places have limestone outcrops and crevasses. Slope is mainly 3 to 35 percent but ranges from 0 to 60 percent.

This unit makes up about 7 percent of the county. It is about 30 percent Farmington soils, 25 percent Wassaic soils, and 45 percent soils of minor extent.

The nearly level to very steep Farmington soils are on broad, undulating landscapes that, in places, have short, steep and very steep slopes. They are shallow to bedrock and somewhat excessively drained and well drained. Bedrock is at a depth of 10 to 20 inches. Permeability is moderate.

The nearly level to strongly sloping Wassaic soils are on broad, undulating landscapes. They are moderately deep to bedrock and well drained and moderately well drained. Bedrock is at a depth of 20 to 40 inches. Permeability is moderate in the surface layer and slow or very slow in the subsoil. The seasonal high water table is at a depth of 24 to 36 inches in March and April.

The soils of minor extent are Nellis, Nunda, Angola, and Burdett soils. The well drained Nellis soils formed in the same kind of glacial till deposits as Farmington soils but are very deep to bedrock. The moderately well drained Nunda soils formed in the same kind of glacial till as Wassaic soils but are very deep to bedrock. The somewhat poorly drained Angola soils are on the lower parts of the landscape that receive runoff from higher, adjacent soils. The somewhat poorly drained Burdett soils are very deep. They formed in the same kind of glacial till deposits as Wassaic soils but are on the lower parts of the landscape and are not bedrock controlled.

In many areas the soils of this unit are farmed. Other areas are brushland or woodland. Generally, the soils are suited to crops, hay, and pasture on dairy farms; however, some areas have creviced limestone bedrock. In some areas irregular topography, steep slopes, seasonal high water table, shallow soils, and rock outcrops are limitations for cultivated crops.

The shallow and moderate depth to bedrock, rock outcrops, and creviced limestone are the main limitations of these soils for community development. In some areas potential is good for use as recreation areas and wildlife habitat.

3. Wellsboro-Lackawanna-Morris

Dominantly gently sloping to steep, well drained to somewhat poorly drained, medium textured, very deep soils that have a fragipan; on uplands

The soils in this map unit formed in very deep glacial till deposits. The landscape consists of ridges, hilltops, and hillsides interspersed with lower, flat areas. Slope is mainly 3 to 25 percent but ranges from 3 to 35 percent.

This unit makes up about 8 percent of the county. It is about 30 percent Wellsboro soils, 15 percent Lackawanna soils, 10 percent Morris soils, and 45 percent soils of minor extent (fig. 2).

The gently sloping to moderately steep Wellsboro soils are on hillsides and ridges where bedrock is at a depth of more than 5 feet. These soils are very deep and moderately well drained. The fragipan between a depth of 8 and 26 inches restricts roots. Permeability is moderate in the surface layer and the upper part of the subsoil and slow in the fragipan and substratum. The seasonal high water table is perched above the fragipan at a depth of 18 to 36 inches in spring.

The gently sloping to steep Lackawanna soils are on the sides and tops of ridges where bedrock is at a depth of more than 5 feet. These soils are very deep and well drained. The fragipan between depths of 17 and 36 inches restricts roots. Permeability is moderate in the surface layer and the upper part of the subsoil and is slow in the fragipan and substratum. The seasonal high water table is at a depth of 30 to 72 inches in spring.

The gently sloping to strongly sloping Morris soils are

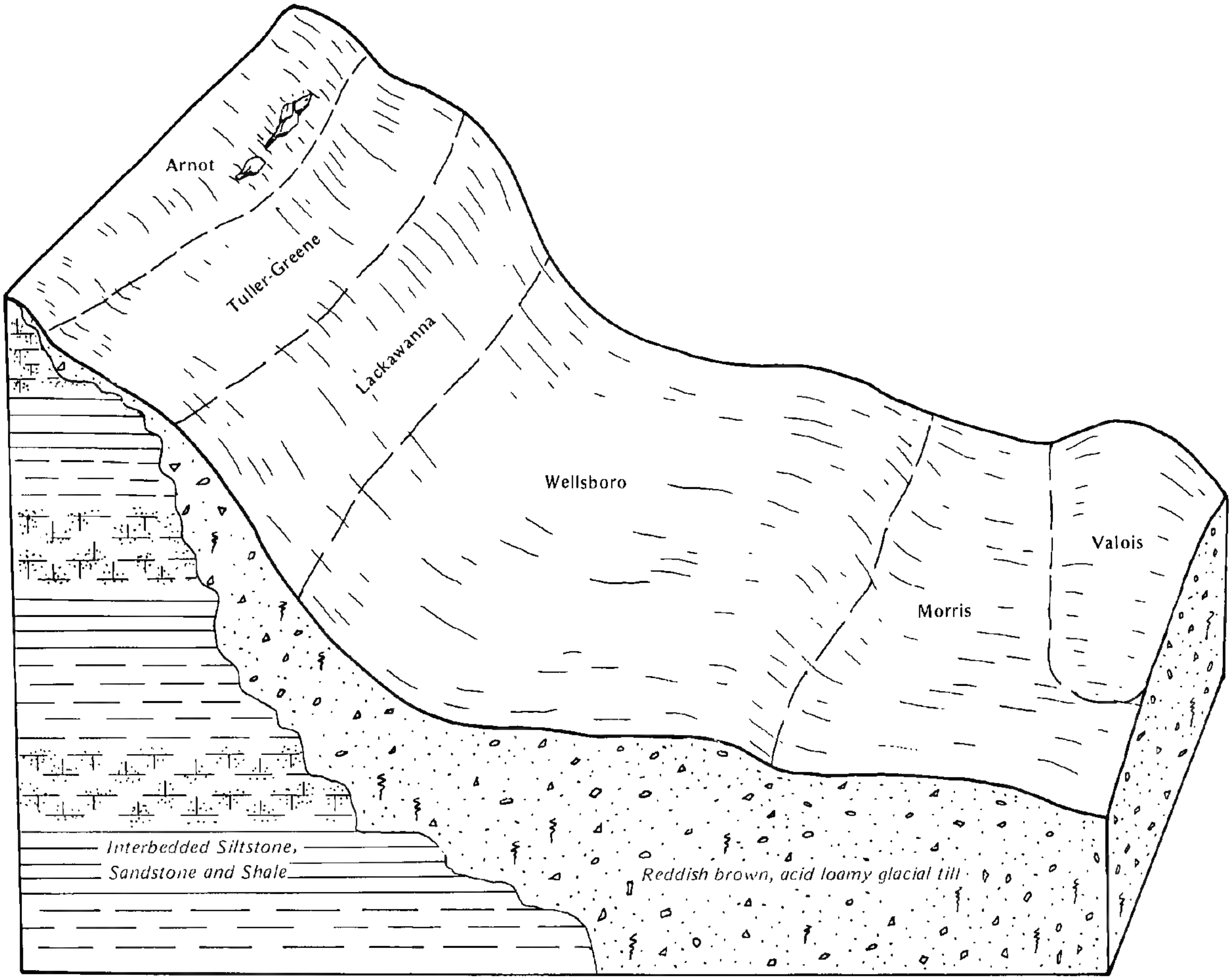


Figure 2.—Typical pattern of soils and parent material in the Wellsboro-Lackawanna-Morris unit.

on the hillsides and flat ridges and between the ridges where bedrock is at a depth of more than 5 feet. These soils are very deep and somewhat poorly drained. The fragipan at a depth of 16 to 24 inches restricts roots. Permeability is moderate in the surface layer and the upper part of the subsoil and slow in the fragipan and substratum. The seasonal high water table is perched above the fragipan at a depth of 6 to 18 inches in late fall and early spring.

The soils of minor extent are Oquaga, Arnot, Tuller, Greene, Valois, and Chenango soils. Oquaga and Arnot soils formed in the same kind of glacial till deposits as Lackawanna and Wellsboro soils. Oquaga soils are 20 to 40 inches deep over bedrock, and Arnot soils are 10 to 20 inches deep over bedrock. Both of these soils are on ridges and hillsides. Tuller, Greene, and Morris soils formed in similar deposits, but Tuller soils are 10 to 20 inches deep over bedrock and Greene soils are 20 to 40 inches deep over bedrock. Valois soils are very deep, do not have a fragipan, and are along valley sides. Chenango soils are very deep and formed in stratified sands and gravels.

In many areas the soils of this unit are used for cultivated crops, hay, and pasture. Other areas are woodland or brushland. Generally, the soils are suited to crops, hay, and pasture on dairy farms and to woodland use. The irregular topography, slope, the seasonal high water table, surface stones, and depth to bedrock in some areas are the main limitations for cultivated crops.

The seasonal high water table and permeability in Lackawanna, Morris, and Wellsboro soils limit use of

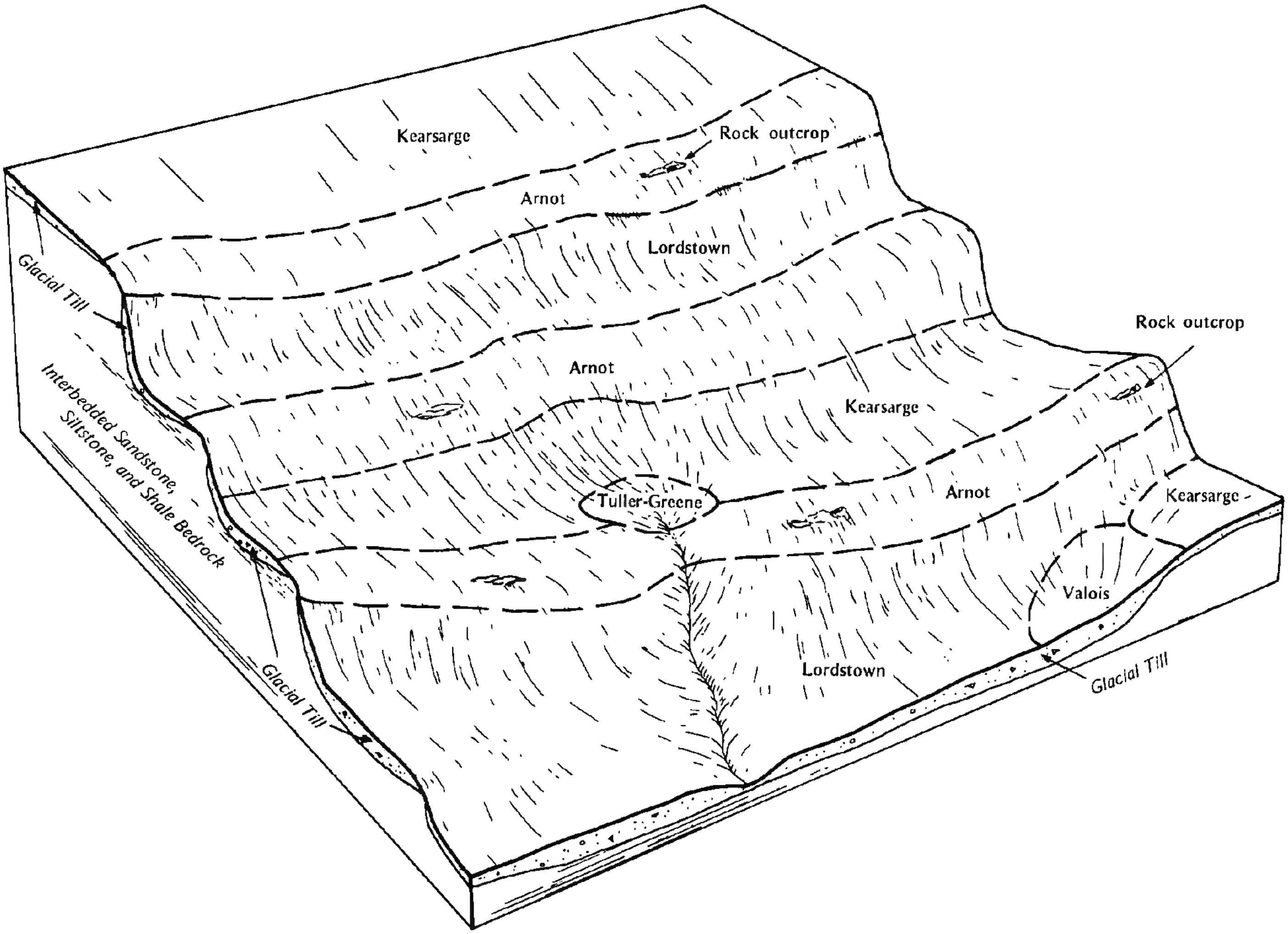


Figure 3.—Typical pattern of soils and parent material in the Lordstown-Kearsarge-Arnot unit.

these soils for community development. In most areas potential is good for use as wildlife habitat and woodland.

4. Lordstown-Kearsarge-Arnot

Dominantly nearly level to very steep, somewhat excessively drained to moderately well drained, medium textured, moderately deep and shallow soils over sandstone and shale; on uplands

The soils in this map unit formed in moderately deep and shallow glacial till deposits. The landscape consists of bedrock-controlled ridges and hills and gently sloping glacial till plains. Some places have sandstone and shale outcrops. Slope is mainly 3 to 35 percent but ranges from 0 to 70 percent.

This unit makes up 17 percent of the county. It is about 25 percent Lordstown soils, 20 percent Kearsarge soils, 15 percent Arnot soils, and 40 percent soils of minor extent (fig. 3).

The nearly level to very steep Lordstown soils are on bedrock-controlled ridges and side slopes. They are moderately deep over bedrock and well drained. Bedrock is at a depth of 20 to 40 inches. Permeability is moderate.

The nearly level and gently sloping Kearsarge soils are on bedrock-controlled ridges. They are shallow over bedrock and somewhat excessively drained. Bedrock is at a depth of 10 to 20 inches. Permeability is moderate.

The gently sloping to very steep Arnot soils are on bedrock-controlled ridges and side slopes. They are shallow over bedrock and somewhat excessively drained to moderately well drained. Bedrock is at a depth of 10 to 20 inches. Permeability is moderate.

The soils of minor extent are Tuller, Nunda, Burdett, Wassaic, Greene, and Valois soils. Shallow, somewhat

poorly drained and poorly drained Tuller soils are in low depressions. The moderately well drained Nunda soils, the somewhat poorly drained Burdett soils, and Lordstown soils formed in glacial till deposits. Nunda and Burdett soils are very deep to bedrock. Wassaic soils formed in glacial till and are moderately deep over limestone bedrock. Greene soils are somewhat poorly drained and moderately deep over bedrock. Valois soils are well drained and very deep over bedrock.

In many areas the soils of this unit are used as woodland. Scattered areas are used as hayland and brushland. Generally, they are poorly suited to farming. Depth to bedrock and droughtiness are the main limitations. Some areas have good potential for woodland production.

The shallow and moderate depth to bedrock and rock outcrops are the main limitations for community development. Some areas have good potential for use as recreation areas and wildlife habitat.

Areas Dominated by Soils Formed in Glacial Lake Deposits

The four general soil map units in this group make up about 30 percent of the acreage in the county. The soils in this group formed in lake-laid deposits that are generally free of gravel fragments. They are mostly moderately well drained and somewhat poorly drained. Most areas of this group are on the plain above the Hudson River. Many less sloping areas are used for farming. The more steeply sloping areas are forestland or brushland. Many areas are in urban use. In some of the urban areas, soil slumping and sliding are serious problems.

5. Colonie-Elnora

Dominantly nearly level to steep, somewhat excessively drained to moderately well drained, coarse textured, very deep soils; on lowland deltas and lake plains

The soils in this map unit formed in sandy deposits on glacial lake plains and deltas. The landscape consists of gently sloping and rolling terrain, intermittent hilly areas, and intermittent streams. The slope is dominantly 3 to 35 percent but ranges from 0 to 50 percent.

The unit makes up about 7 percent of the county. It is about 50 percent Colonie soils, 25 percent Elnora soils, and 25 percent soils of minor extent.

The gently sloping to very steep Colonie soils are on dunes and flat plains where bedrock is at a depth of more than 5 feet. These soils are very deep and well drained or somewhat excessively drained. Permeability is rapid or very rapid.

The nearly level and gently sloping Elnora soils are on broad plains where bedrock is at a depth of more than 5 feet. The soils are very deep and moderately well drained. Permeability is moderately rapid in the surface layer and rapid or very rapid in the subsoil and substratum. The seasonal high water table is at a depth of 18 to 24 inches in spring.

The soils of minor extent in this unit are Stafford, Granby, Cosad, and Adrian soils. The somewhat poorly drained Stafford soils, the poorly drained and very poorly drained Granby soils, and Colonie and Elnora soils formed in similar materials. The moderately well drained Claverack soils and the somewhat poorly drained Cosad soils have a clay layer between a depth of 18 and 40 inches. The very poorly drained Adrian soils formed in 16 to 51 inches of organic matter over sands.

In many areas the soils of this unit are in woodland or urban use. Scattered areas are used for hay or vegetable crops. Generally, these soils are suited to row crops, hay, and vegetable crops. In strongly sloping areas Colonie soils generally are droughty and erodible. Elnora soils have a seasonal high water table between a depth of 18 and 24 inches in spring.

The seasonal high water table and the slope are limitations for community development. These soils are well suited to community development.

6. Scio-Elmridge

Dominantly nearly level to gently sloping, moderately well drained, medium textured and moderately coarse textured over fine textured, very deep soils; on lake plains and terraces

The soils in this map unit formed in fine sandy loam or silt loam over clay on glacial lake plains. The landscape is gently sloping and has intermittent streams (fig. 4). The slope ranges from 0 to 8 percent.

This unit makes up about 2 percent of the county. It is about 55 percent Scio soils, 25 percent Elmridge soils, and 20 percent soils of minor extent.

The nearly level and gently sloping Scio soils are on lake plains. Bedrock is at a depth of more than 5 feet. These soils are very deep and moderately well drained. Permeability is moderate or moderately slow. The seasonal high water table is at a depth of 18 to 24 inches.

The nearly level and gently sloping Elmridge soils are on lake plains. Bedrock is at a depth of more than 5 feet. These soils are very deep and moderately well drained. Permeability is moderately rapid above the silty and clayey layers and moderately slow to slow within. The seasonal high water table is at a depth of 18 to 36 inches.

Figure 4.—*Landscape in the Scio-Elmridge unit. Scio soils are on the ridges of the lake plain in the background. Elmridge soils are on the less sloping areas in the foreground.*

The soils of minor extent are Shaker, Raynham, Birdsall, Stafford, and Sudbury soils. The somewhat poorly drained and poorly drained Shaker soils and Elmridge soils formed in similar material. The poorly drained Raynham soils, the very poorly drained Birdsall soils, and the Scio soils formed in similar material. The somewhat poorly drained Stafford soils, the moderately well drained Sudbury soils, and Elmridge soils formed in similar material, but Stafford and Sudbury soils do not have silty and clayey layers between 18 and 40 inches.

In many areas the soils in this unit are farmed. In other areas they are used for urban development, as woodland, or as brushland. Generally, they are suited to row crops, hay, and vegetable crops. The seasonal high water table is a limitation for cultivated crops.

The seasonal high water table and frost-action potential are severe limitations to most community development. On Elmridge soils, permeability is moderately slow or slow in the silty and clayey layers at a depth between 18 and 40 inches and is the main limitation for community development.

7. Hudson-Rhinebeck

Dominantly nearly level to steep, moderately well drained and somewhat poorly drained, fine textured, very deep soils; on dissected lake plains

The soils in this map unit formed in silt and clay on glacial lake plains. The landscape consists mainly of gently sloping and sloping areas and intermittent, steep and very steep areas and intermittent streams. The slope is dominantly 3 to 35 percent but ranges from 0 to 45 percent.

This unit makes up about 11 percent of the county. It

is about 50 percent Hudson soils, 20 percent Rhinebeck soils, and 30 percent soils of minor extent (fig. 5).

The gently sloping to steep Hudson soils are on broad, glacial lake plains where bedrock is at a depth of more than 5 feet. They are very deep and moderately well drained. Permeability is very slow or slow in the subsoil and substratum. The seasonal high water table is at a depth of 18 to 24 inches in spring.

The nearly level and gently sloping Rhinebeck soils are on broad, glacial lake plains where bedrock is at a depth of more than 5 feet. They are very deep and somewhat poorly drained. Permeability is moderately slow in the surface layer and below. The seasonal high water table is at a depth of 6 to 18 inches from January to May.

The soils of minor extent are Madalin, Elmridge, Shaker, Unadilla, Scio, and Raynham soils. Madalin soils are similar to Hudson and Rhinebeck soils but are poorly drained and very poorly drained. Elmridge and Shaker soils have 18 to 40 inches of fine sandy loam over clay and silt. Unadilla, Scio, and Raynham soils have less clay than Hudson and Rhinebeck soils.

In many areas the soils of this unit are used as hayland or woodland. Generally, they are suited to dairy farming, but erosion is a severe hazard. The seasonal high water table is a problem, particularly on Rhinebeck soils.

The seasonal high water table, slow permeability, frost-action potential, slope, and shrinking and swelling are limitations for community development.

8. Urban land-Udipsamments-Udorthents

Urbanized areas and dominantly nearly level to steep, somewhat excessively drained and moderately well drained, coarse textured to fine textured, very deep soils; on deltas and plains

The soils in this map unit formed in sand, silt, and clay deposits on glacial lake plains and deltas. The landscape has been altered during construction of housing, commercial buildings, parking lots, and streets and roads but also has open spaces, such as parks, vacant lots, and lawns. The slope is dominantly 0 to 15 percent but ranges from 0 to 4 percent.

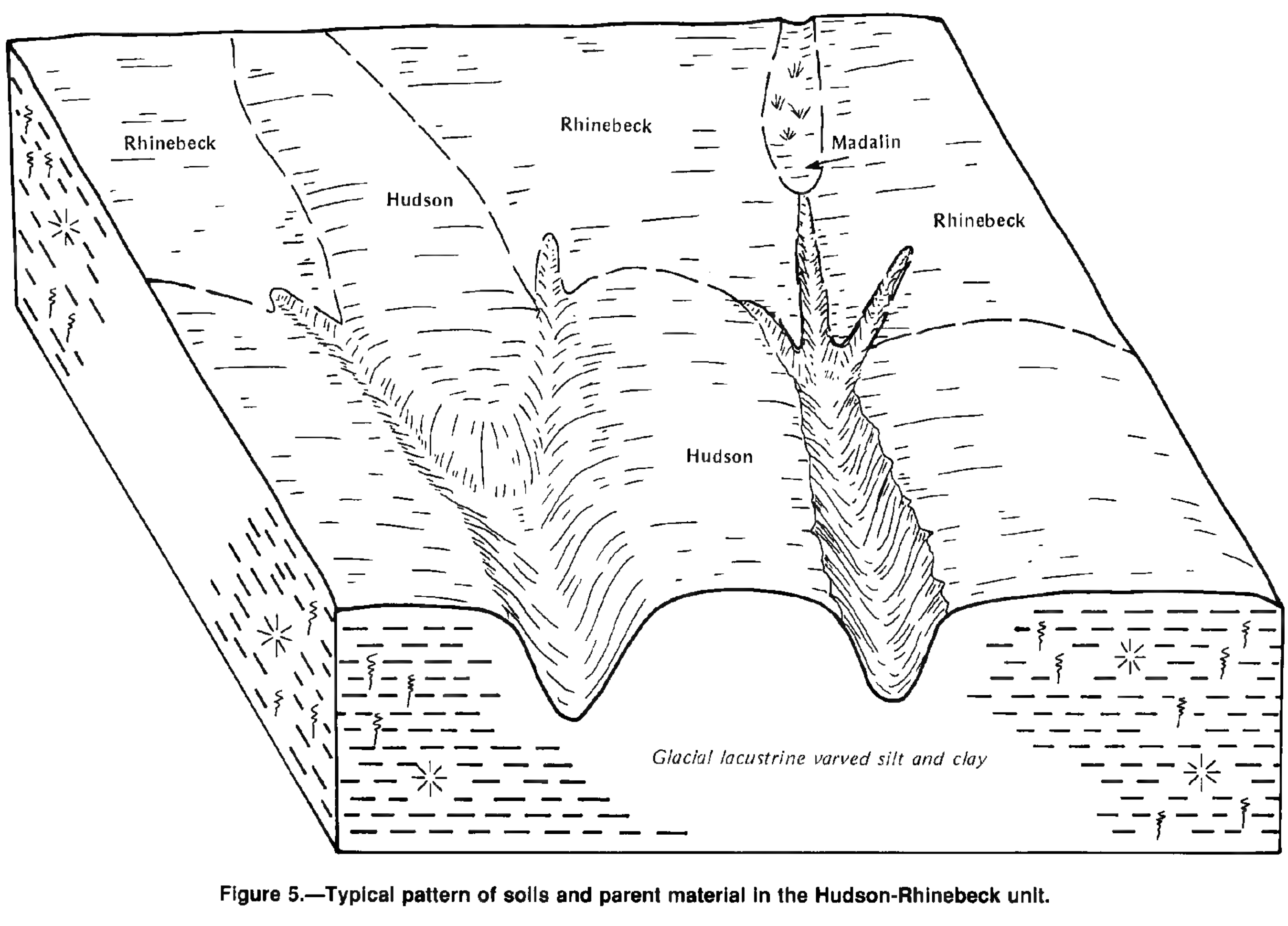


Figure 5.—Typical pattern of soils and parent material in the Hudson-Rhinebeck unit.

The unit makes up about 10 percent of the county. It is about 30 percent Urban land, 15 percent Udipsamments, 15 percent Udorthents, and 40 percent soils of minor extent.

The nearly level to strongly sloping Urban land consists of areas where impervious asphalt, concrete, and buildings cover the soil surface. Most Urban land areas are used as sites for commercial buildings, parking lots, or single family dwellings.

The nearly level to steep Udipsamments consist of areas where Colonie and Elnora soils have been smoothed or graded and where bedrock is at a depth of more than 5 feet. These soils are very deep and somewhat excessively drained to moderately well drained. Permeability is moderately rapid or rapid.

The nearly level and gently sloping Udorthents are areas where Unadilla, Hudson, and Nunda soils have been smoothed or graded and where bedrock is at a depth of more than 5 feet. These soils are very deep and well drained and moderately well drained. Permeability is variable.

The areas of minor extent are Dumps, which are areas containing manmade or waste material and small areas of sandy or loamy fill material.

Most areas of this unit are used for residential or commercial development.

These areas have been graded or smoothed, so onsite investigation is needed to determine the suitability for most uses.

Areas Dominated by Soils Formed in Recent Alluvial Deposits

One general soil map unit is in this group and it makes up only 1 percent of the acreage in the county. The soils in this group formed mainly in silty alluvial deposits. They are on nearly level flood plains adjacent to streams that are subject to periodic overflow. The soils range from well drained to poorly drained. The better drained soils in this group are used intensively for vegetable crops and row crops associated with dairy farm operations. Only a few areas in this group are used for community development because of the flood hazard.

9. Teel-Hamlin

Dominantly nearly level, well drained and moderately well drained, medium textured, very deep soils; on flood plains

The soils in this map unit formed in recent silty alluvial deposits. The landscape consists of level or nearly level areas adjacent to perennial streams. The slope is dominantly 0 to 2 percent but ranges from 0 to 3 percent.

This unit makes up about 1 percent of the county. It is about 55 percent Teel soils, 30 percent Hamlin soils, and 15 percent soils of minor extent.

The level to nearly level Teel soils are on flood plains where bedrock is at a depth of more than 5 feet. These soils are very deep and moderately well drained. Permeability is moderate. These soils are subject to occasional flooding from adjacent streams for brief periods in spring.

The nearly level Hamlin soils are on flood plains where bedrock is at a depth of more than 5 feet. They are very deep and well drained. They are subject to occasional flooding from adjacent streams for brief periods in spring. Permeability is moderate.

The soils of minor extent are Wakeland, Wayland, Scio, and Raynham soils. The somewhat poorly drained Wakeland soils, the poorly drained and very poorly drained Wayland soils, and Hamlin and Teel soils formed in similar material. The moderately well drained Scio soils and the somewhat poorly drained Raynham soils are slightly higher on the landscape than the major soils of this unit and are not subject to flooding.

In many areas the soils of this unit are used for corn and hay, but scattered areas are in vegetable crops and woodland use (fig. 6). Generally, these soils are suited to row crops, hay, and vegetable crops. The seasonal high water table and flooding are the main limitations.

Flooding and the seasonal high water table are limitations for community development.

Areas Dominated by Soils Formed in Glacial Till and Outwash Deposits

One general soil map unit is in this group and it makes up 2 percent of the acreage in the county. The soils in this group formed in gravelly glacial outwash or loose loamy glacial till deposits. They generally are somewhat excessively drained or well drained. They are mainly on valley terraces and plains mostly in the central part of the county. Slope is mostly gently sloping to hilly, except along terrace fronts and dissected areas, where it ranges to steep. Many areas of the soils in this group are used for vegetable crops and row crops associated with dairy farm operations. Some areas are in residential development.

10. Chenango-Valois

Dominantly nearly level to moderately steep, well drained and somewhat excessively drained, moderately coarse textured, very deep soils; on terraces and lower valley sides

The soils in this map unit formed in very deep, gravelly and loamy deposits on and near outwash terraces and along valley side slopes. The landscape consists of undulating ridges and hillsides and some

Figure 6.—Landscape in the foreground is in the Teel-Hamlin unit. Although subject to flooding, these soils are well suited to cultivated crops. The sloping soils in the background are in the Nunda-Burdett unit.

valley side slopes where the terrain is smooth and moderately steep. The slope ranges from 0 to 25 percent.

This unit makes up about 2 percent of the county. It is about 45 percent Chenango soils, 35 percent Valois soils, and 20 percent soils of minor extent.

The nearly level to hilly Chenango soils are on outwash terraces and fans near perennial streams and outwash plains where bedrock is at a depth of more than 5 feet. These soils are very deep and somewhat excessively drained or well drained. Permeability is moderate or moderately rapid. The seasonal high water table is between depths of 36 and 72 inches. These soils are somewhat droughty.

The gently sloping to moderately steep Valois soils are on hillsides and valley sides adjacent to outwash terraces and till ridges at the base of steep slopes where bedrock is at a depth of more than 5 feet. These soils are very deep and well drained. Permeability is moderate or moderately rapid.

The soils of minor extent are Castile, Chautauqua, Howard, Lordstown, and Nunda soils. The moderately well drained Castile soils are similar to Chenango soils. The moderately well drained Chautauqua soils are similar to Valois soils. The somewhat excessively drained to well drained Howard soils are similar to Chenango soils but have a higher clay content. The well drained Lordstown soils are similar to Valois soils but are 20 to 40 inches deep over bedrock. The moderately well drained Nunda soils are similar to Valois soils but have more clay in the subsoil.

In many areas the soils in this unit are used as cropland, hayland, and orchards. Other areas are wooded. Generally, these soils are suited to cultivated

crops, hay, orchards, dairy farms, and woodland use. The irregular topography, surface stones, and the slope are the main limitations for cultivated crops.

The irregular topography and slope are limitations for community development.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the substratum. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Hornell silt loam, 0 to 3 percent slopes, is a phase of the Hornell series.

Some map units are made up of two or more major soils. These map units are called soil complexes or undifferentiated groups.

A *soil complex* consists of two or more soils, or one or more soils and a miscellaneous area, in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Fluvaquents-Udifluvents complex, frequently flooded, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in the mapped areas are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Medihemists and Hydraquents, ponded, is an undifferentiated group in this survey area.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Pits, gravel, is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The "Glossary" defines many of the terms used in describing the soils.

Soil Descriptions

Ad—Adrian muck. This nearly level soil is very deep and very poorly drained. It is in depressions and bogs on uplands and in concave basins on lowland plains. Areas are irregularly shaped and range from 3 to 15 acres in size. Slopes are 0 to 1 percent.

Typically, this soil is black muck to a depth of 26 inches. The substratum extends to a depth of 60 inches or more. The upper part is very friable, dark gray fine sand and very dark gray fine sandy loam. The lower part is slightly sticky, dark gray loamy fine sand.

Included with this soil in mapping are small areas of Granby and Stafford soils along the margins of

depressions and bogs. Granby and Stafford soils have more sand and less organic matter in the upper part of the soil than the Adrian soil. Ponded areas of Medihemists and Hydraquents and areas of Carlisle soils that have organic deposits more than 51 inches deep are also included. These soils are generally near the center of bogs or depressions. Areas of included soils are as much as 3 acres and make up as much as 25 percent of the map unit.

The seasonal high water table in this Adrian soil is at a depth of less than ½ foot from October to June in most years. Water is ponded on the surface during the wettest parts of the year. Depth to bedrock is more than 60 inches. Depth to the water table limits rooting depth. Permeability is moderately slow to moderately rapid in the organic layers and rapid in the substratum. The available water capacity is high, and surface runoff is very slow.

Most areas of this soil have not been drained for farming and are in woodland or marsh grasses.

This soil is not suited to cultivated crops and pasture. The high water table and ponding on the surface for prolonged periods of the year are severe limitations to most uses in farming. In many areas drainage is not feasible because this soil is mainly on the lowest parts of the landscape and suitable outlets are not available. Also, drainage increases subsidence and the rate of decomposition of the organic material. A water management system that lowers the water table only during the growing season will reduce subsidence and decomposition. Soil blowing is also a hazard in large areas that are cultivated. Using windbreaks or leaving crop residue on the surface will help control soil blowing.

The potential productivity of this soil for red maple is moderate. Because of the prolonged seasonal high water table, occasional ponding, and high humus content, the soil surface is very soft and is a severe limitation to use of heavy equipment. Seedling mortality is high because of the seasonal high water table. Rooting depth is restricted to less than 12 inches for some tree species; thus, uprooting of trees in windy periods is a hazard. Red maple, eastern cottonwood, and quaking aspen are common on the soil.

The limitations as a site for dwellings are subsidence and ponding. Areas near this soil are better suited to use as sites for dwellings. On these sites Colonie soils and other mineral soils are better drained and are on the higher parts of the landscape.

The main limitations of this soil for local roads and streets are ponding and subsidence. Diverting roads around areas of this soil will avoid the problems associated with this soil. If roads are built on this soil, coarse textured, mineral soil subgrade or base material is needed to replace the soft, organic deposits and raise the road grade above the level of ponding.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are ponding, subsidence, and a poor filtering capacity. Ground-water contamination is a hazard because the soil has a seasonal high water table and because the rapidly permeable, sandy substratum is a poor filter of effluent. Other soils, such as mineral soils, that are better drained and higher on the landscape, are better suited to this use.

This soil is in capability subclass Vw.

Ae—Allis silt loam. This nearly level soil is moderately deep and poorly drained. It is on the flatter areas of bedrock-controlled uplands. Areas of this soil are oval in shape and range from 3 to 10 acres in size. Slopes are 0 to 3 percent.

Typically, the surface layer is dark grayish brown silt loam about 9 inches thick. The subsoil is gray and olive gray, mottled silty clay loam about 16 inches thick. The substratum to a depth of 34 inches is olive brown, mottled, very channery silty clay loam. Interbedded shale and sandstone is at a depth of 34 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained Hornell soils in the slightly higher landscape positions. Also included, where sandstone bedrock is dominant, is the somewhat poorly drained and poorly drained Greene and Tuller soils. Some small areas of the very deep Ilion soils are also included. Also included, in some areas, are soils, such as Allis soils, that have a channery surface layer or slope of 3 to 8 percent. Areas of included soils are as much as 3 acres and make up about 10 to 15 percent of this map unit.

The seasonal high water table in this Allis soil is at a depth of less than 1 foot and is perched on the silty clay loam subsoil from November through June. The seasonal high water table limits rooting depth. Bedrock is 20 to 40 inches below the surface. Permeability is slow or very slow. Available water capacity is moderate, and runoff is slow. The surface layer is moderately acid to neutral.

Most areas of this soil are brushland.

This soil is poorly suited to cultivated crops because of the seasonal high water table and depth to bedrock. Surface and subsurface drainage systems lower the water table and allow use of planting and harvesting equipment earlier in spring. However, the moderate depth to bedrock affects the design and layout of drainage systems. Also, adequate drainage outlets may be difficult to find because the topography is nearly level and slightly depressional. Cover crops, a conservation tillage system, and crop rotations will

improve soil tilth and increase infiltration and availability of water.

This soil is moderately suited to pasture because of the seasonal high water table. Grazing when the soil is wet, especially in spring, causes surface compaction and a loss of forage. Applications of fertilizer, weed control, pasture rotation, proper stocking rates, and timely deferment of grazing help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. The seasonal high water table and the low strength of the soil surface limit use of planting and harvesting equipment. Seedling mortality and the windthrow hazard are severe because the seasonal high water table results in poor aeration and a shallow rooting depth. Red maple and eastern white pine are common on the soil.

The limitations of this soil on sites for dwellings with basements are the seasonal high water table and depth to bedrock. The included soils in this unit and nearby soils are deeper to bedrock and better drained and are better suited to use as sites for dwellings with basements. This soil is better suited to dwellings without basements. Installing subsurface drains around footings and foundations will lower the water table. Adding fill material to elevate the floor of dwellings without basements above the surrounding ground level and grading to divert surface water will also reduce wetness.

The main limitations of this soil for local roads and streets are the seasonal high water table and low strength. Constructing roads on raised, fill material will reduce wetness and prevent the road damage that the seasonal high water table causes. Providing a suitable subgrade or base material will improve soil stability and strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the depth to bedrock. Specially designed systems will overcome the moderate depth to bedrock and the seasonal high water table. Drainage around the filter field and diversion of surface water from the higher areas will reduce wetness. The hardness of the local bedrock will influence installation costs. Other soils that are deeper and better drained in the nearby higher landscape positions are better suited to this use.

This soil is in capability subclass IVw.

AnA—Angola silt loam, 0 to 3 percent slopes. This nearly level soil is moderately deep and somewhat poorly drained. It is in smooth, slightly depressional, bedrock-controlled areas on uplands. Areas of this soil are irregularly shaped and generally less than 25 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 10 inches thick. The subsoil extends to a depth of 25 inches. The upper part is olive, mottled silt loam. The lower part is grayish brown, mottled channery silt loam. Interbedded shale and sandstone bedrock is at a depth of 25 inches.

Included with this soil in mapping are small areas of poorly drained and very poorly drained soils that are similar to this Angola soil. Also included are areas of the very deep Burdett and Ilion soils and small areas of the less clayey Tuller and Greene soils. Areas of included soils are less than 3 acres in size and make up 15 to 20 percent of the map unit.

The seasonal high water table in this Angola soil is at a depth of ½ foot to 1½ feet, perched above the bedrock, from December to May. Depth to bedrock ranges from 20 to 40 inches. Permeability is moderate in the surface layer and slow in the subsoil. Available water capacity is moderate. Surface runoff is slow. The surface layer is moderately acid to mildly alkaline.

Most areas are brushland or pasture.

This soil is moderately suited to cultivated crops. Where drained, it is among the best suited soils in the county for food and fiber production. The seasonal high water table and depth to bedrock are the main limitations. Drainage ditches and subsurface drainage lower the water table and allow use of tillage and planting equipment early in spring. Also, the moderate depth to bedrock affects the design and layout of subsurface drainage systems. Depth to bedrock restricts plant roots, which do not have sufficient water during dry periods in some years. Cover crops, a conservation tillage system, and incorporating crop residue into the soil will improve soil tilth and increase infiltration and availability of water.

This soil is moderately well suited to pasture. The seasonal high water table reduces the grazing period. Grazing when the soil is too wet will cause surface compaction. Overgrazing can also reduce the quantity and quality of the forage. Diverting runoff and subsurface seepage from the higher adjacent areas will reduce ponding in some areas. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table makes the soil too soft under heavy loads and is a moderate limitation to equipment use. Seeds and seedlings of water-tolerant species survive well if competing vegetation is controlled. Depth to bedrock restricts root penetration. Northern red oak, sugar

maple, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. The moderate depth to bedrock is also a limitation. Installing foundation drains and applying protective coatings to basement walls will help prevent wet basements. A backhoe, when digging the basement, can easily rip away the soft shale bedrock, but the harder sandstone bedrock is more difficult to remove.

The main limitations for local roads and streets are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Constructing the road on raised, fill material will prevent the road damage that the seasonal high water table causes. Providing a coarse textured subgrade or base material and providing surface or subsurface drainage will reduce the frost-action potential and increase soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation in the subsoil, and the depth to bedrock. The included soils in this unit that are deeper to bedrock are better suited to this use. A specially designed septic tank absorption field or an alternative system will properly filter effluent if located in areas of the included soils in this map unit. A drainage system around the filter field and diversion ditches to intercept water from the higher areas will reduce wetness.

This soil is in capability subclass IIIw.

AnB—Angola silt loam, 3 to 8 percent slopes. This gently sloping soil is moderately deep and somewhat poorly drained. It is in slightly concave positions in bedrock-controlled areas on uplands. Areas of this soil are irregularly shaped and range from 5 to 30 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 10 inches thick. The subsoil extends to a depth of 25 inches. The upper part is olive, mottled silt loam. The lower part is grayish brown, mottled channery silt loam. Interbedded shale or sandstone bedrock is at a depth of 25 inches.

Included with this soil in mapping are small areas of the poorly drained and very poorly drained soils that are similar to the Angola soils. Also included, in some depressions and along drainageways, are areas of the very deep Ilion soils. Also included are areas of the less clayey Tuller and Greene soils. Small areas of the shallow, well drained Kearsarge soils are where siltstone or sandstone underlies this soil. Areas of included soils are less than 3 acres and make up 10 percent of the map unit.

The seasonal high water table in this Angola soil is at a depth of ½ foot to 1½ feet from December to May. The water table is perched above bedrock. Depth to bedrock is 20 to 40 inches. Permeability is moderate in the surface layer and slow in the subsoil. Available water capacity is moderate. Surface runoff is slow. The surface layer ranges from moderately acid to mildly alkaline.

Most areas of this soil are brushland or pasture.

This soil is moderately suited to cultivated crops. The seasonal high water table and depth to bedrock are the main limitations. Erosion is a problem on some long slopes. Drainage ditches and subsurface drainage will lower the water table and allow use of tillage and planting equipment earlier in spring. Also, the moderate depth to bedrock affects the design and layout of subsurface drainage systems. Depth to bedrock restricts plant roots, which do not have sufficient water during dry periods in some years. Cover crops, a conservation tillage system, and incorporating crop residue into the soil will improve soil tilth and increase infiltration of and availability of water.

This soil is moderately well suited to pasture. The seasonal high water table reduces the grazing period. Grazing when the soil is too wet will cause surface compaction. Overgrazing will also reduce the quantity and quality of forage. Diverting runoff and subsurface seepage from the higher adjacent areas will reduce water accumulation in some areas. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table makes this soil too soft under heavy loads and is a severe limitation to equipment use. Seeds and seedlings survive well if competing vegetation is controlled. The moderate depth to bedrock restricts root penetration. Northern red oak, sugar maple, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. The moderate depth to bedrock is also a limitation. On construction sites, erosion is a limitation where the soil is bare of vegetation. Installing foundation drains and applying protective coatings to basement walls will help prevent wet basements. A backhoe can easily rip away the soft shale bedrock when digging the basement. The harder sandstone bedrock is more difficult to remove. Restoring vegetation or applying mulch on the surface helps to control erosion.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Constructing

roads on raised fill material helps prevent the road damage that the seasonal high water table causes. Providing a coarse textured subgrade or base material and installing surface or subsurface drainage will reduce the frost-action potential and enhance soil strength. Mulching or revegetating to stabilize graded roadbanks and ditches help to control erosion.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation in the subsoil, and the depth to bedrock. The included soils in this unit that are deeper to bedrock are better suited to this use. A specially designed septic tank absorption field or an alternative system will properly filter effluent if located in areas of the deep included soils. A drainage system around the filter field and diversion ditches to intercept water from the higher areas will reduce wetness. Revegetating or mulching disturbed areas of this soil helps to control erosion.

This soil is in capability subclass IIIw.

AnC—Angola silt loam, 8 to 15 percent slopes. This strongly sloping soil is moderately deep and somewhat poorly drained. It is in the intermediate positions between bedrock-controlled areas and deeper deposits. Areas of this soil are irregularly shaped and range from 5 to 30 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 10 inches thick. The subsoil extends to a depth of 25 inches. The upper part is olive, mottled silt loam. The lower part is grayish brown, mottled channery silt loam. Interbedded shale or sandstone bedrock is at a depth of 25 inches.

Included with this soil in mapping are small areas of poorly drained soils that are similar to Angola soils. Also included are small areas of the very deep Nunda and Burdett soils. Areas of included soils are less than 3 acres in size and make up 15 percent of the map unit.

The seasonal high water table in this Angola soil is at a depth of ½ foot to 1½ feet, perched above bedrock, from December to May. Bedrock is at a depth of 20 to 40 inches. Permeability is moderate in the surface layer and slow in the subsoil. Available water capacity is moderate. Surface runoff is medium. The surface layer ranges from moderately acid to mildly alkaline.

Most areas of this soil are brushland and pasture. Some areas have large acreages of woodland.

This soil is moderately suited to cultivated crops. The seasonal high water table, depth to bedrock, and the hazard of erosion are the main limitations. Surface and subsurface drainage lower the water table and allow use of tillage and planting equipment earlier in spring. The moderate depth to bedrock limits the design and layout of subsurface drainage systems. Depth to bedrock restricts plant roots, which do not have sufficient water during dry periods in some years. Cover crops, a conservation tillage system, stripcropping, and diversion ditches increase water availability, improve soil tilth, and control erosion.

This soil is moderately well suited for pasture. The seasonal high water table reduces the grazing period. Grazing when the soil is too wet will cause surface compaction. Overgrazing can also reduce the quantity and quality of forage. Diverting runoff and subsurface seepage from the higher adjacent areas helps reduce the accumulation of water. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table makes the soil too soft under heavy loads and is a severe limitation to equipment use. Seeds and seedlings of water-tolerant species survive well if competing vegetation is controlled. Depth to bedrock restricts root penetration. Northern red oak, sugar maple, and white ash are common on this soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. The moderate depth to bedrock and the strong slopes are also limitations. Long, strongly sloping areas will increase the cost of excavating basements and of smoothing operations following construction. Erosion is a hazard where the soil is bare of vegetation. Installing foundation drains and applying protective coatings to basement walls will prevent wet basements. A backhoe easily rips the softer shale bedrock when digging the basement. The harder sandstone bedrock is more difficult to remove. Restoring vegetation, applying mulch, and installing diversion ditches or grassed waterways help control erosion.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. The costs will be high for construction including excavation and grading. Also, roadbanks are subject to erosion. This soil is soft when wet and causes the pavement to crack under heavy traffic. Constructing the road on raised fill material will prevent the road damage that the seasonal high water table causes. Providing a coarse textured subgrade or base material and installing surface or subsurface drainage will reduce the frost-action potential and enhance soil strength. Mulching or revegetating to stabilize graded roadbanks and ditches helps to control erosion.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation in the subsoil, and the depth to bedrock. Higher installation costs, lateral seepage of effluent, and erosion are hazards if

septic tank absorption fields are installed on this soil. The deeper included soils are better suited to this use. A specially designed septic tank absorption field or an alternative system will filter effluent if located in the areas of the deeper included soils in this map unit. A drainage system around the filter field and diversion ditches to intercept water from the higher areas help control erosion. Revegetating or mulching disturbed areas of this soil helps control erosion.

This soil is in capability subclass IIIe.

ArC—Arnot very channery silt loam, 8 to 15 percent slopes. This rolling soil is shallow and somewhat excessively drained to moderately well drained. It is on bedrock-controlled, glaciated uplands and has a characteristic steplike appearance. Areas of this soil are broad and irregular in shape and range from 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown very channery silt loam about 8 inches thick. The subsoil is brown and strong brown very channery silt loam about 10 inches thick. Dark gray fractured siltstone bedrock is at a depth of 18 inches. In some map units the surface and subsurface layers have fewer rock fragments.

Included with this soil in mapping, in depressions, along drainageways, and at the base of some slopes, are small areas of the somewhat poorly drained and poorly drained Tuller and Greene soils. Also included, in areas of interbedded, folded shale and sandstone bedrock, are areas of the shallow Nassau soils. Areas of included soils are as much as 3 acres and make up 15 to 25 percent of the map unit.

Water is perched on the bedrock in this soil for very brief periods in spring, but the water table is usually below a depth of 6 feet. Bedrock is at a depth of 10 to 20 inches. The shallow depth to bedrock restricts rooting depth. Permeability is moderate. Available water capacity is very low. Surface runoff is medium. Reaction is strongly acid or very strongly acid throughout the soil.

Most areas of this soil are brushland and woodland. Some areas are hayland.

This soil is poorly suited to cultivated crops because of the shallow depth to bedrock, the erosion hazard, and droughtiness. Also, surface stones cause excessive wear on tillage equipment. Removing surface stones will facilitate tillage. In addition, in areas of rock outcrop, cultivated crops are unsuitable. Using crop residue and regularly adding organic matter will increase infiltration of water and soil moisture. A conservation tillage system that leaves residue on the surface after planting, in combination with contour farming or stripcropping, helps control erosion.

This soil is moderately suited to pasture because of droughtiness. Although some forage plants can be easily established in many areas of this soil, regrowth after a period of grazing is generally slow except in areas of the deeper included soils. Proper stocking rates, fertilization, weed control, and rotation grazing help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderate. Droughtiness causes high seedling mortality and slow growth. The shallow depth to bedrock limits root growth to 20 inches and causes a moderate windthrow hazard. Machine planting of seedlings is generally difficult because of the rolling slopes and the scattered rock outcrops. Northern red oak, sugar maple, eastern white pine, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. The deeper soils in included areas and on nearby landscapes are better suited to this use. The soil is better suited to use as sites for dwellings without basements. Building above the bedrock and landscaping around the dwelling with additional fill to modify the soil will help to overcome the depth to bedrock.

The main limitation of this soil for local roads and streets is the shallow depth to bedrock. Carefully planning and laying out road grades and routes will avoid bedrock removal.

The main limitation of this soil for septic tank absorption fields is the depth to bedrock. The deeper soils in the included areas of this unit and in nearby areas are better suited to this use.

This soil is in capability subclass IVe.

AsB—Arnot-Rock outcrop complex, 0 to 8 percent slopes. This map unit consists of a nearly level to gently sloping, shallow Arnot soil and areas where bedrock is exposed at the surface. The unit is on glaciated plateaus and summits. The somewhat excessively drained to moderately well drained Arnot soil and areas of Rock outcrop are in such an intricate pattern on the landscape that separating them in mapping was not practical. Slopes are smooth and have occasional steps or small bedrock escarpments. Areas of this unit range from 3 to 50 acres in size. They are about 50 percent Arnot soil, 30 percent Rock outcrop, and 20 percent other soils.

Typically, the surface layer of the Arnot soil is dark grayish brown very channery silt loam about 8 inches thick. The subsoil is brown and strong brown very channery silt loam about 10 inches thick. Dark gray fractured siltstone bedrock is at a depth of 18 inches.

Included with this unit in mapping are small areas of the somewhat poorly drained Tuller and Greene soils in slight depressions and drainageways. Also included, in

some areas where the subsoil is thicker, are the moderately deep Lordstown soils. Also included are some areas of soils that are similar to this Arnot soil but that are deep to bedrock. Also included are small areas of soils that are similar to the Arnot soil but that have fewer channers in the surface layer. These included areas are as much as 3 acres and make up 20 percent of the map unit.

Water is perched above the bedrock in the Arnot soil for very brief periods in spring, but the water table is usually below a depth of 6 feet. Bedrock is at a depth of 10 to 20 inches. Depth to bedrock restricts rooting depth. Permeability is moderate. Available water capacity is very low. Surface runoff is slow or medium on the Arnot soil and rapid on the Rock outcrop. The Arnot soil is strongly acid or very strongly acid throughout.

Most areas of this map unit are woodland or brushland.

The Arnot soil is not suited to cultivated crops because of the shallow depth to bedrock, rock outcrops, and droughtiness. Also, surface stones cause excessive wear on tillage equipment. Bedrock restricts root growth at a depth of 18 inches.

The Arnot soil is poorly suited to pasture because of droughtiness, rock outcrops, and sparse vegetation. Although some forage plants can be easily established on areas of the Arnot soil, regrowth after a period of grazing is generally slow except in areas of the deeper included soils. Proper stocking rates, weed control, and rotation grazing help sustain forage growth in summer.

The potential productivity of the Arnot soil for northern red oak is moderate. Droughtiness causes high seedling mortality and slow growth. Bedrock at a depth of 20 inches or less limits root growth and causes a moderate windthrow hazard. The numerous rock outcrops generally prevent the use of machinery in planting seedlings. Northern red oak, sugar maple, eastern white pine, and white ash are common on the Arnot soil.

The main limitation of the Arnot soil on sites for dwellings with basements is the depth to bedrock. The deeper soils in included areas in this unit and on nearby landscapes are better suited to this use. The Arnot soil is better suited to use as sites for dwellings without basements. Building above the bedrock and landscaping around dwellings with additional fill to modify the soil will help overcome the depth to bedrock.

The main limitation of the Arnot soil for local roads and streets is the shallow depth to bedrock. Carefully planning and laying out road grades and routes will avoid bedrock removal.

The main limitation affecting the use of the Arnot soil as a site for septic tank absorption fields is the depth to bedrock. The deeper soils in included areas of this unit and in nearby areas will adequately filter effluent and are better suited to this use.

This unit is in capability subclass VIs.

AsF—Arnot-Rock outcrop complex, 25 to 70 percent slopes. This map unit consists of a steep and very steep, shallow Arnot soil and areas where bedrock is exposed at the surface. The unit is on glaciated ridges. The somewhat excessively drained to moderately well drained Arnot soil and areas of Rock outcrop are in such an intricate pattern on the landscape that separating them in mapping is not practical. Slopes consist mainly of escarpments that have intermittent shelves of lesser sloping areas. Areas of this unit range from 3 to 150 acres. This map unit is about 35 percent Arnot soil, 35 percent Rock outcrop, and 30 percent other soils.

Typically, the surface layer of the Arnot soil is dark grayish brown very channery silt loam about 8 inches thick. The subsoil is brown and strong brown very channery silt loam about 10 inches thick. Dark gray, fractured siltstone bedrock is at a depth of 18 inches.

Included with this unit in mapping are small areas of the moderately deep Lordstown soils. Also included, near the base of escarpments where colluvium has accumulated, are deep and very deep soils. Also included are small areas of soils on alluvial fans adjacent to intermittent streams. Also included are small areas of soils that are similar to the Arnot soil but that do not have channers in the surface layer. These included areas are as much as 3 acres in size and make up about 30 percent of the map unit.

Water is perched above the bedrock in the Arnot soil for very brief periods in spring, but the water table is usually below a depth of 6 feet. Bedrock is at a depth below 10 to 20 inches. Depth to bedrock restricts rooting depth. Permeability is moderate. Available water capacity is very low. Surface runoff generally is very rapid, but on some shelf positions it is medium. Reaction is strongly acid or very strongly acid throughout.

Most areas of the Arnot soil in this map unit are woodland.

The Arnot soil is not suited to cultivation because of the slope, shallow depth to bedrock, rock outcrops, severe erosion hazard, and droughtiness. Also, surface stones cause excessive wear on tillage equipment. The included soils that are less sloping and deeper to bedrock are better suited to cultivated crops.

The Arnot soil is also not suited to pasture because of the slope, severe erosion hazard, rock outcrops, and

droughtiness. Forage density is low and stands are difficult to establish except in areas of the deeper, included soils.

The potential productivity of the Arnot soil for northern red oak is moderate. Droughtiness causes high seedling mortality and slow growth. Escarpments and bedrock ledges create natural barriers for harvesting equipment and impede machine planting of seedlings. The shallow depth to bedrock restricts root growth and causes a severe windthrow hazard. Northern red oak, sugar maple, and eastern white pine are common on the soil.

The main limitations of this soil on sites for dwellings with basements are slope and depth to bedrock. Other soils with fewer limitations or an area of the Arnot soil with deeper, less steep included soils are better suited to this use.

The main limitations of the Arnot soil for local roads and streets are the slope and depth to bedrock. Planning the construction of roads helps to minimize the need for grading and blasting. This planning adapts road design to the slope, particularly following the contour of the landscape and running parallel to the base of an escarpment.

The main limitations affecting the use of the Arnot soil as a site for septic tank absorption fields are the slope and the depth to bedrock. The deeper, less sloping included soils are better suited to this use.

This unit is in capability subclass VIIs.

Br—Birdsall mucky silt loam. This soil is in depressional areas of terraces on old lacustrine lakes. Areas of this soil are irregular in shape and range from 5 to 20 acres in size. Slopes are 0 to 2 percent.

Typically, the surface layer is black mucky silt loam about 8 inches thick. The subsoil is gray, mottled silt loam about 7 inches thick. The substratum is gray and dark gray, mottled very fine sandy loam to a depth of 64 inches or more.

Included with this soil in mapping are small areas of the poorly drained Raynham soils. Also included, within areas of thin, sandy deposits, are small spots of Shaker soils. Areas of included soils are less than 3 acres in size and make up 10 to 15 percent of this map unit.

The seasonal high water table in this Birdsall soil is at a depth of less than 1 foot most of the year. Depth to bedrock is more than 60 inches. The seasonal high water table affects the rooting depth. Permeability is moderate or moderately slow in the surface layer and subsoil and slow in the substratum. Available water capacity is high. The surface layer ranges from strongly acid to moderately acid.

Most areas of this soil are not drained for agriculture and are woodland or brushland.

This soil is not suited to cultivated crops because of the seasonal high water table. Surface and subsurface drainage systems will lower the water table. In many areas drainage outlets are not available because of the basinlike topography. Diversion ditches placed at the perimeter of the soil will divert runoff from adjacent land away from this soil. Cover crops, crop rotations, and a conservation tillage system help maintain soil tilth. Tilling the soil when wet causes surface compaction and decreases water infiltration.

This soil is poorly suited to pasture because of the seasonal high water table. The surface layer is very soft under saturated conditions. Grazing during wet periods compacts the soil and destroys desirable forage. Proper stocking rates, weed control, and crop rotation will increase forage yields.

The potential productivity of this soil for red maple is moderate. The seasonal high water table makes the soil surface very soft and unable to support most heavy equipment. It causes a severe windthrow hazard and restricts root growth to the surface layer for most tree species. It also causes a high rate of seedling mortality. Red maple and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing subsurface drains around the foundations and adequately sealing the foundation will lower the water table. Grading the land surface to divert runoff from the higher areas away from the house will also reduce wetness.

The main limitations of this soil for local roads and streets are the seasonal high water table and the frost-action potential. Installing drainage or constructing the road on raised fill will reduce wetness. Also, constructing roads on coarse textured subgrade or base material reinforces the road surface and reduces the frost-action potential.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation. Other soils in the higher nearby areas are better suited to this use.

This soil is in capability subclass Vw.

BuA—Burdett silt loam, 0 to 3 percent slopes. This very deep soil is nearly level and somewhat poorly drained. It is on till plains in areas that are near drainageways. Areas of this soil are irregularly shaped and range from 5 to 60 acres.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is brown, pale brown, and dark grayish brown silt loam about 5 inches thick. The subsoil is about 30 inches thick. The upper part is grayish brown to dark

grayish brown, mottled silty clay loam. The lower part of the subsoil is dark grayish brown, mottled gravelly silty clay loam. The substratum is dark grayish brown and brown, mottled gravelly silty clay loam to a depth of 68 inches or more.

Included with this soil in mapping are areas of the moderately well drained Nunda soils on hilltops. Also included are areas of the poorly drained and very poorly drained Ilion and Madalin soils in depressions and along drainageways. Areas of included soils are as much as 3 acres in size and make up about 15 percent of this map unit.

The seasonal high water table in the Burdett soil is perched on the clayey subsoil at a depth of ½ foot to 1½ feet from December to May in most years. Permeability is moderate in the surface and subsurface layers and slow in the subsoil and substratum. Available water capacity is high, and surface runoff is slow. Reaction is strongly acid to neutral in the surface layer and subsoil and slightly acid to moderately alkaline in the substratum.

Most of the acreage of this soil is used as hayland, pasture, or woodland.

This soil is moderately suited to many crops grown in the area. Where drained, it ranks among the best suited soils in the county for food and fiber production. The seasonal high water table is the main limitation. Surface and subsurface drainage systems lower the water table. Diversions placed at the perimeter of the unit will reduce the runoff from higher areas that tends to accumulate in small depressional areas of this soil. Cover crops, a conservation tillage system, and crop residue mixed into the soil help maintain organic matter and improve soil tilth.

This soil is moderately well suited to pasture. The seasonal high water table reduces the grazing period. Restricting grazing when the soil is wet will reduce surface compaction and damage to forage. Diverting runoff and subsurface seepage from the higher adjacent areas will reduce water accumulation in some areas of this soil. Rotation grazing, proper stocking rates, weed control, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table and restricted rooting depth are the major limitations. Seeds and seedlings will survive if competing vegetation is controlled. The soil is soft when wet and restricts the use of heavy equipment to dry periods. The rate of seedling mortality and the windthrow hazard are both moderate. Northern red oak, sugar maple, beech, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Grading the land surface to divert runoff from the higher areas also helps reduce wetness.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. When wet this soil is soft and causes the pavement to crack under heavy traffic. Constructing the road on raised fill material will reduce wetness and prevent the road damage that the seasonal high water table causes. Providing a coarse textured subgrade or base material and installing surface or subsurface drainage will reduce the frost-action potential and enhance soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the subsoil. A specially designed septic tank absorption field or an alternative system will properly filter effluent. An alternate system will include a drainage system around the filter field to lower the water table, diversion ditches to intercept water from the higher areas, and an enlarged trench below the distribution lines to improve percolation.

This soil is in capability subclass IIIw.

BuB—Burdett silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and somewhat poorly drained. It is on convex ridges on till plains. Areas of this soil are irregularly shaped and range from 5 to 60 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is brown to pale brown and dark grayish brown silt loam about 5 inches thick. The subsoil is 30 inches thick. The upper part is grayish brown to dark grayish brown, mottled silty clay loam. The lower part is dark grayish brown, mottled gravelly silty clay loam. The substratum is dark grayish brown and brown, mottled gravelly silty clay loam to a depth of 68 inches or more.

Included with this soil in mapping are areas of the moderately well drained Nunda soils on hilltops. The poorly drained and very poorly drained Ilion and Madalin soils in depressions and along drainageways are also included. Areas of included soils are as much as 3 acres in size and make up about 15 percent of this map unit.

The seasonal high water table in this Burdett soil is perched on the clayey subsoil at a depth of ½ foot to 1½ feet from December to May in most years. Permeability is moderate in the surface and subsurface layers and slow in the subsoil and substratum. Available water capacity is high. Surface runoff is medium. Reaction is strongly acid to neutral in the surface layer

and subsoil and slightly acid to moderately alkaline in the substratum.

Most of the acreage of this soil is used as hayland, pasture, or woodland.

This soil is moderately suited to many crops grown in the area. The seasonal high water table is the main limitation. On some long slopes erosion is a hazard. Surface and subsurface drainage will lower the water table and allow earlier use of tillage and planting equipment. Placing diversions at the perimeter of this soil will reduce the runoff from higher areas that tends to accumulate in depressional areas of this soil. Cover crops, a conservation tillage system, and crop residue mixed into the soil help maintain organic matter, control erosion, and improve soil tilth.

This soil is moderately suited to pasture. The seasonal high water table reduces the grazing period. Allowing animals to graze when the soil is too wet will cause surface compaction. Overgrazing can also reduce the quantity and quality of forage. Diverting runoff and subsurface seepage from the higher adjacent areas will reduce water accumulation in some areas. Rotation grazing, proper stocking rates, weed control, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table makes the soil soft under heavy loads and thus limits the use of equipment. Seeds and seedlings of water-tolerant species survive well if competing vegetation is controlled. The seasonal high water table restricts root penetration and causes a moderate windthrow hazard. Northern red oak, sugar maple, beech, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Land grading and properly placed diversions will remove surface water.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Constructing roads on raised fill material will reduce wetness and prevent the road damage that the seasonal high water table causes. Providing a coarse textured subgrade or base material and providing surface or subsurface drainage will reduce the frost-action potential and enhance soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the subsoil. A specially designed septic tank absorption field or an alternative system will properly filter effluent. An alternate system will include a drainage system around the filter field to lower the water table, diversion ditches to intercept water from the higher areas, and an enlarged trench below the distribution line to improve percolation.

This soil is in capability subclass IIIw.

BuC—Burdett silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and somewhat poorly drained. It is on the lower part of hillsides on till plains. Areas of this soil are irregularly shaped and range from 5 to 60 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is brown to pale brown and dark grayish brown silt loam about 5 inches thick. The subsoil is about 30 inches thick. The upper part is grayish brown to dark grayish brown, mottled silty clay loam. The lower part is dark grayish brown, mottled gravelly silty clay loam. The substratum is dark grayish brown and brown, mottled gravelly silty clay loam to a depth of 68 inches or more.

Included with this soil in mapping are the moderately well drained Nunda soils in the adjacent higher positions of the landscape. The poorly drained and very poorly drained Ilion soils are in depressions and along drainageways. Areas of included soils are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Burdett soil is perched on the clayey subsoil at a depth of 6 to 18 inches from November to May in most years. Permeability is moderate in the surface and subsurface layers and slow in the subsoil and substratum. Available water capacity is high, and surface runoff is medium. The surface layer and subsoil are strongly acid to neutral and the substratum is slightly acid to moderately alkaline.

Most of the acreage of this soil is used as hayland, pasture, or woodland.

This soil is moderately suited to many crops grown in the area. The seasonal high water table and the moderate erosion hazard are the main limitations. Surface and subsurface drainage will lower the water table and allow earlier use of tillage and planting equipment. Cover crops, a conservation tillage system, stripcropping, and crop residue mixed into the soil help maintain organic matter, control erosion, and improve soil tilth.

This soil is moderately well suited to pasture. The seasonal high water table reduces the grazing period. Allowing animals to graze when the soil is too wet will cause surface compaction. Overgrazing can also reduce the quantity and quality of forage. Diverting runoff and subsurface seepage from the higher adjacent areas will

reduce water accumulation in some areas. Rotation grazing, proper stocking rates, weed control, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table makes the soil soft under heavy loads and limits the use of equipment. Seeds and seedlings survive well if competing vegetation is controlled. The seasonal high water table restricts root penetration and causes a moderate windthrow hazard. Northern red oak, sugar maple, beech, and hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Erosion is a hazard during construction. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Land grading and properly placed diversions will remove surface water. Restoring vegetation, applying mulch, and using temporary waterways and diversions during construction help control erosion.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Constructing roads on raised fill material helps reduce wetness. Providing a coarse textured subgrade or base material and installing surface or subsurface drainage will reduce the frost-action potential and enhance soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the subsoil. A specially designed septic tank absorption field or an alternative system will properly filter effluent. An alternate system includes a drainage system around the filter field to lower the water table, diversion ditches to intercept water from the higher areas, and an enlarged trench below the distribution line to improve percolation.

This soil is in capability subclass IIIe.

BvB—Burdett silt loam, 0 to 8 percent slopes, very stony. This is a very deep, somewhat poorly drained, gently sloping soil. Large stones cover 3 to 15 percent of the surface. Numerous seeps and slight depressions are on side slopes where drainageways originate. Areas of this soil are irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is brown to pale brown and dark grayish brown silt loam about 5 inches thick. The subsoil is 30 inches thick. The upper part of the subsoil is grayish brown to dark grayish brown, mottled silty clay loam. The lower part is dark grayish brown, mottled gravelly silty clay loam. The substratum is dark grayish brown and brown, mottled gravelly silty clay loam to a depth of 68 inches or more.

Included with this soil in mapping are areas of the moderately well drained Nunda soils on convex slopes. Also included, in depressions and along drainageways, are small areas of the poorly drained Ilion soils and the very poorly drained Madalin soils. Also included, where the subsoil has less clay, are some areas of Busti and Chautauqua soils. Also included, in areas adjacent to bedrock-controlled landscape, are some small areas of Angola soils. Areas of included soils are as much as 3 acres and make up 15 to 20 percent of this map unit.

The seasonal high water table in this Burdett soil is at a depth of ½ foot to 1½ feet, perched above the slowly permeable subsoil from December to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and slow in the subsoil and substratum. Available water capacity is high. Surface runoff is slow or medium. The surface layer and subsoil are strongly acid to neutral.

Most of the acreage of this soil is woodland and pasture.

This soil is not suited to cultivated crops because of the seasonal high water table and many large surface stones. The surface stones interfere with tillage operations and cause excessive wear on equipment. Surface and subsurface drainage systems lower the water table and reduce wetness. Cover crops, conservation tillage system, and crop residue mixed into the soil help maintain organic matter and improve soil tilth.

This soil is poorly suited to pasture. The seasonal high water table reduces the grazing period. The large stones on the surface impede proper pasture maintenance. Grazing when the soil is too wet will cause surface compaction. Overgrazing will also reduce the quantity and quality of forage. Removing stones from the pasture will allow for yearly mowing, reduce the risk of livestock injury, and increase the forage density. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The seasonal high water table makes the soil surface soft in spring and fall and subsequently unable to support heavy equipment in most areas. It also restricts root growth and causes a moderate windthrow hazard and a moderate rate of seedling mortality in some areas of this soil. Northern red oak, sugar maple, beech, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings

with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls will prevent wet basements. Land grading and diversion ditches and interceptor drains placed upslope from buildings help divert runoff away from the site.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Constructing roads on raised fill material will reduce wetness. Installing surface and subsurface drainage on the construction site and providing a coarse textured subgrade or base material will also reduce wetness and the frost-action potential.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the clayey subsoil. A specially designed septic tank absorption field or an alternative system will properly filter effluent. An alternate system includes a drainage system around the filter field to lower the water table, diversion ditches to intercept water from the higher areas, and an enlarged trench below the distribution lines to improve percolation.

This soil is in capability subclass VIs.

BxA—Busti silt loam, 0 to 3 percent slopes. This nearly level soil is very deep and somewhat poorly drained. It is on foot slopes, tops of hills, and along valley sides of glacial till plains. Areas of this soil are irregularly shaped and range from 5 to 80 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is 23 inches thick. The upper part is grayish brown, mottled gravelly loam, and the lower part is dark grayish brown gravelly loam. The substratum is dark grayish brown gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping, where the subsoil is more clayey, are areas of the moderately well drained Chautauqua and Nunda soils. Also included are areas of the somewhat poorly drained Burdett soils and the poorly drained Ilion soils along drainageways or in depressional areas. Areas of included soils are as much as 3 acres in size and make up 10 to 15 percent of this map unit.

The seasonal high water table in this Busti soil ranges from a depth of ½ foot to 1½ feet from November to April. Depth to bedrock is 60 inches or more. Permeability is moderate or moderately slow in the surface layer and subsoil and moderately slow or slow in the substratum. Available water capacity is moderate, and surface runoff is slow. The surface layer is moderately acid or slightly acid.

Most of the acreage is used for hay or pasture.

This soil is moderately suited to most crops grown in the area. Where drained, it is among the best suited soils in the county for food and fiber production. In undrained areas, wetness delays tilling and planting and in some years interferes with harvest operations. Surface and subsurface drainage will lower the water table. Cover crops, crop rotations, conservation tillage system, and crop residue mixed into the soil will help maintain the organic matter content and improve soil tilth.

This soil is moderately well suited to pasture. Excluding livestock in early spring when the soil is wet will avoid surface compaction and loss of important pasture plants. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The seasonal high water table makes the surface soft in early spring and causes a moderate equipment limitation. Wetness causes a moderate rate of seedling mortality. Sugar maple, white ash, northern red oak, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls will help prevent wet basements. Land grading and a properly designed diversion will help channel some excess water from adjacent hillsides away from the house site.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Providing a coarse textured subgrade or base material and installing surface or subsurface drainage will reduce the frost-action potential and wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation. A specially designed septic tank absorption field or an alternative system will probably filter effluent. An alternate system includes a drainage system around the filter field to lower the water table, diversion ditches to intercept water from the higher areas to reduce wetness, and an enlarged trench below the distribution line to improve percolation.

This soil is in capability subclass IIIw.

BxB—Busti silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and somewhat poorly drained. It is on foot slopes, tops of hills, and along

valley sides of glacial till uplands. Areas of this soil are irregularly shaped and range from 5 to 150 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is 23 inches thick. The upper part is grayish brown gravelly loam and the lower part is dark grayish brown gravelly loam. The substratum is dark grayish brown gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping, where the subsoil is more clayey, are areas of the moderately well drained Chautauqua and Nunda soils. Also included are areas of the somewhat poorly drained Burdett soils along drainageways. Areas of included soils are as much as 3 acres and make up 10 to 15 percent of this map unit.

The seasonal high water table in this Busti soil is at a depth of ½ foot to 1½ feet between November and April. Depth to bedrock is 60 inches or more. Permeability is moderate or moderately slow in the surface layer and subsoil and moderately slow or slow in the substratum. Available water capacity is moderate, and surface runoff is slow or medium. The surface layer is moderately acid or slightly acid.

Most of the acreage is used for hay or pasture.

This soil is moderately suited to most crops grown in the area. Where drained, it ranks among the best suited soils in the county for food and fiber production. In some years in undrained areas, the seasonal high water table delays tilling and planting activities and interferes with harvest operations. Surface and subsurface drainage will lower the water table. On some long slopes, erosion is a hazard in cultivated fields. Cover crops, crop rotations, a conservation tillage system, and crop residue mixed into the soil help control erosion, maintain organic matter content, and improve soil tilth.

This soil is moderately well suited to pasture. Excluding livestock in early spring when the soil is wet will help avoid surface compaction and loss of important pasture plants. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The seasonal high water table makes the soil surface soft in early spring and causes a moderate equipment limitation. It also causes a moderate rate of seedling mortality. Sugar maple, white ash, northern red oak, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Land grading and properly designed diversions help channel some excess water from adjacent hillsides away from the house site.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. This soil is soft when wet and causes the pavement to crack under heavy traffic. Providing a coarse textured subgrade or base material and installing surface or subsurface drainage will reduce the frost-action potential and wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation. A specially designed septic tank absorption field or an alternative system will properly filter effluent. An alternate system includes a drainage system around the filter field to lower the water table, diversion ditches to intercept water from the higher areas to reduce wetness, and an enlarged trench below the distribution lines to improve percolation.

The soil is in capability subclass IIIw.

Ca—Carlisle muck. This nearly level soil is very deep and very poorly drained. It is in basins or depressions, swamps, and marshes. Areas of this unit are round or long and narrow and range from 5 to 25 acres. Slopes are less than 1 percent.

Typically, this soil is muck to a depth of 99 inches or more. The upper part is black, the upper middle part is very dark brown, the lower middle part is dark reddish brown, and the lower part is very dark gray.

Included with this soil in mapping, around the edges, are areas of Palms, Madalin, Birdsall, and Granby soils. The very poorly drained Palms muck, which has a mineral substratum at a depth of 16 to 51 inches, makes up nearly 15 percent of some areas. The very poorly drained Birdsall soils and poorly drained or very poorly drained Granby and Madalin soils are mineral soils at the edges of Carlisle soils. Areas of included soils are as much as 3 acres in size and make up about 20 to 30 percent of this map unit.

The seasonal high water table in this Carlisle soil is at a depth of less than 1 foot in summer and is ponded with water for long periods in fall, winter, and spring. In undrained areas during dry summers, it is below a depth of 1 foot, but even in extremely dry summers it is within a depth of 2½ feet. The depth of the water table affects rooting depth. Permeability ranges from moderately slow to moderately rapid. The available water capacity is high, and surface runoff is very slow or ponded. The surface layer ranges from very strongly acid to neutral.

Most areas of this soil have not been drained for farming and are woodland.

This soil is not suited to cultivated crops and pasture.

The high water table and ponding on the surface for prolonged periods are severe limitations for most crops. In many areas drainage is not feasible. This soil is mainly on the lowest parts of the landscape where suitable outlets are not available. Also, drainage increases subsidence and the rate of decomposition of the organic material. A water management system that lowers the water table during the growing season will reduce subsidence and decomposition. Soil blowing is also a hazard in large cultivated areas. Using windbreaks or leaving crop residue on the surface will help control soil blowing.

The potential productivity of this soil for red maple is moderate. The use of heavy equipment for planting and harvesting is generally not practical because of the seasonal high water table and the soft soil. The seasonal high water table and the ponding make seedling mortality and the windthrow hazard severe. Water-tolerant species grow well on this soil. Red maple, eastern cottonwood, and swamp white oak are common on this soil.

The main limitations of this soil on sites for dwellings with basements are surface water and subsidence. Nearby soils are better suited to use as sites for dwellings. These soils include Elnora and other better drained soils on the higher parts of the landscape.

The main limitations of this soil for local roads and streets are ponding and subsidence. Better suited sites for roads should be selected.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are subsidence and ponding. If septic systems are installed on this soil, ground-water contamination is a hazard. Better drained soils that are higher on the landscape are better suited to this use.

This soil is in capability subclass Vw.

CeA—Castile gravelly loam, 0 to 3 percent slopes. This nearly level soil is very deep and moderately well drained. It is on outwash terraces and kames. Areas of this soil are irregularly shaped and range from 5 to 80 acres in size.

Typically, the surface layer is dark brown gravelly loam about 5 inches thick. The subsoil extends to a depth of 28 inches. The upper part is brown gravelly loam and the lower part is dark yellowish brown gravelly loam. The substratum is dark brown, stratified sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the well drained to somewhat excessively drained Chenango soils in the higher positions on the landscape and the somewhat poorly drained Busti soils in small depressional areas. On outwash terraces above nearby flood plains, the substratum may be finer textured than that of the Castile soil. Areas of included soils are as much as 3 acres and make up about 15 percent of this map unit.

The seasonal high water table in this Castile soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate to moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. The available water capacity is moderate, and surface runoff is slow. The surface layer ranges from very strongly acid to moderately acid.

Most areas of this soil are used for cultivated crops or hay.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. In some years the seasonal high water table delays planting for brief periods in early spring. Random subsurface drainage in the wetter spots of this map unit will lower the water table. Although this soil is easy to till, in some areas small stones and gravel on the surface hinder tillage. Cover crops, crop rotations, a conservation tillage system, and crop residue mixed into the soil improve soil tilth and increase organic matter content.

This soil is well suited to pasture. Grazing when the soil is wet will cause surface compaction and destroy pasture plants. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. In some years droughtiness restricts growth during dry periods in summer. In places surface gravel limits use of machinery to planting seedlings. Sugar maple, northern red oak, and black cherry are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and protective coatings on basement walls help prevent wet basements. Also, diversions and interceptor drains placed between the house and nearby hills will carry some of the excess water away from the site.

The main limitation of this soil for local roads and streets is the frost-action potential. Using coarse textured subgrade or base material as fill material for roads helps reduce frost action. A drainage system will remove excess water in areas of this soil.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and poor filtering of effluent. An alternate system with a special design to adequately filter the effluent will reduce contamination of ground

Figure 7.—Gently sloping Castile soils in the foreground meet the requirements for prime farmland. They are used mainly for cultivated crops, hay, or pasture. Lordstown and Arnot soils are on the steep, wooded hillside in the background. They do not meet the requirements for prime farmland.

water. A drainage system around the filter field will lower the water table, and diversions will intercept water from the higher areas.

This soil is in capability subclass IIw.

CeB—Castile gravelly loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on outwash terraces and kames. Areas of this soil are irregularly shaped and range from 5 to 80 acres.

Typically, the surface layer is dark brown gravelly loam about 5 inches thick. The subsoil extends to a depth of 28 inches. The upper part is brown gravelly loam and the lower part is dark yellowish brown gravelly loam. The substratum is dark brown, stratified sand and gravel to a depth of 60 inches or more.

Included with this soil in mapping are small areas of well drained to somewhat excessively drained Chenango soils in the higher positions on the landscape and the somewhat poorly drained Rhinebeck soils in small depressional areas. On outwash terraces above nearby flood plains, in some areas the substratum of this Castile soil is finer textured. Areas of included soils are as much as 3 acres and make up about 15 percent of this map unit.

The seasonal high water table in this Castile soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the surface layer and subsoil and rapid or very rapid in the substratum. Available water capacity is moderate, and surface runoff is slow. The surface layer ranges from very strongly acid to moderately acid.

Most of the acreage is used for cultivated crops or hay (fig. 7).

This soil is well suited to cultivated crops. It is among

the best suited soils in the county for food and fiber production. In some years the seasonal high water table delays planting for brief periods in early spring. Random subsurface drainage in the wetter spots of this map unit will lower the water table. Although this soil is easy to till, in some areas small stones and gravel on the surface limit tillage. Erosion is a hazard on some long slopes. Cover crops, crop rotations, a conservation tillage system, and returning crop residue to the soil improve soil tilth, increase the organic matter content, and control erosion on long slopes.

This soil is well suited to pasture. Grazing when the soil is wet will cause surface compaction and destroy pasture plants. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. In some years droughtiness restricts growth during dry periods in summer. In places surface gravel limits use of machinery to plant seedlings. Sugar maple, northern red oak, and blackberry are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and protective coatings on basement walls will help prevent wet basements. Also, diversions and interceptor drains placed between the house and nearby hills will carry some of the excess water away from the site.

The main limitation of this soil for local roads and streets is the frost-action potential. Using coarse textured subgrade or base material as fill material for roads helps reduce frost action. A drainage system will remove excess water.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and poor filtering of effluent. An alternate system with a special design to filter out effluent will reduce ground-water contamination in the substratum. A drainage system around the filter field will lower the water table, and diversions will intercept water from the higher areas.

This soil is in capability subclass IIw.

CgB—Chautauqua gravelly silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on the tops of ridges and hills on undulating till plains. Areas of this soil are roughly oblong or irregularly shaped and range from 5 to 40 acres.

Typically, the surface layer is dark brown gravelly silt loam about 8 inches thick. The subsoil is 13 inches thick. The upper part is yellowish brown gravelly loam, and the lower part is yellowish brown, mottled gravelly loam. The substratum extends to a depth of 60 inches or more. The upper part is brown gravelly loam, and the lower part is olive brown very gravelly loam.

Included with this soil in mapping are areas of the somewhat poorly drained Busti soils and the poorly drained Ilion soils in the lower positions on the landscape. Also included are some areas of Nunda and Burdett soils, which are higher in clay content than the Chautauqua soil. Areas of included soils are as much as 3 acres and make up about 15 percent of this map unit.

The seasonal high water table in this Chautauqua soil in early spring is at a depth of 1½ to 2 feet. Depth to bedrock is 60 inches or more. Permeability is moderate in the subsoil and moderately slow in the substratum. Available water capacity is moderate. Surface runoff is medium. The surface layer ranges from strongly acid to slightly acid.

Most of the acreage is used for hay or pasture.

This soil is well suited to most cultivated crops. It ranges among the best suited soils in the county for food and fiber production. The seasonal high water table when perched on the firm substratum is the main limitation to crops. In some years it delays planting in early spring. Random subsurface drains placed in the wetter areas of this soil will lower the water table. Cover crops, crop residue mixed into the surface layer, and a conservation tillage system that includes no-till or stubble mulching help maintain organic matter content, improve soil tilth, and increase water infiltration.

This soil is well suited to pasture. In some areas the seasonal high water table and midsummer droughtiness retard plant growth slightly and restrict grazing for short periods of time. Overgrazing and grazing when the soil is too wet cause surface compaction and reduce the new growth of grasses and legumes. Proper stocking rates, rotation grazing, random drainage systems, applications of lime and fertilizer, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. There are no management problems in woodland use. The soil is soft when wet, especially in early spring, and restricts the use of heavy equipment to drier periods. Sugar maple, white ash, northern red oak, and black cherry are common on the soil.

The seasonal high water table is the main limitation of this soil on sites for dwellings with basements. Interceptor drains placed upslope from buildings will help divert runoff and seepage and subsequently help prevent wet basements. Installing subsurface drains around the foundations and adequately sealing basement walls also help prevent wet basements. Placing buildings in the higher areas of this map unit will avoid the problem of wetness.

The frost-action potential and the seasonal high water table are the main limitations of this soil for local roads and streets. Providing coarse textured subgrade or base material to frost depth will reduce frost action. Constructing roads on raised fill material and installing drainage systems help prevent the road damage that both frost action and the seasonal high water table cause.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing drainage around the filter fields and installing diversions to intercept water from the higher areas will lower the water table. Enlarging the trench below the distribution lines will improve percolation.

This soil is in capability subclass IIw.

CgC—Chautauqua gravelly silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and moderately well drained. It is on the tops of ridges and hills. Areas of this soil are roughly oblong or irregularly shaped and range from 35 to 45 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 8 inches thick. The subsoil is 13 inches thick. The upper part is yellowish brown gravelly loam, and the lower part is mottled yellowish brown gravelly loam. The substratum extends to a depth of 60 inches or more. The upper part is brown gravelly loam, and the lower part is olive brown very gravelly loam.

Included with this soil in mapping are areas of the somewhat poorly drained Busti soils in the lower spots on the landscape. Also included are areas of more clayey moderately well drained Nunda soils and somewhat poorly drained Burdett soils. Included areas are as much as 3 acres and make up 10 to 15 percent of this map unit.

The seasonal high water table in this Chautauqua soil is at a depth of 1½ to 2 feet in early spring. Depth to bedrock is 60 inches or more. Permeability is moderate in the subsoil and moderately slow in the substratum. The available water capacity is moderate. Surface runoff is medium. The surface layer ranges from strongly acid to slightly acid.

Most of the acreage is used for hay or pasture. Some areas are woodland or brushland.

This soil is moderately suited to cultivated crops. The seasonal high water table and the erosion hazard are the main limitations. The seasonal high water table limits early spring planting, especially near low spots and steep areas. A random subsurface drainage system lowers the water table. A conservation tillage system that leaves crop residue on the surface after planting in combination with stripcropping and contour farming or terraces help control erosion. Cover crops, crop residue mixed into the surface layer, and regular additions of organic material to the soil help maintain organic matter content, improve soil tilth, and increase infiltration and soil moisture during midsummer droughtiness.

This soil is moderately well suited to pasture. The seasonal high water table and midsummer droughtiness limit plant growth slightly and restrict grazing for short periods of time. Overgrazing and grazing when the soil is too wet will compact the soil surface, cause further erosion, and reduce new plant growth. Proper stocking rates, rotation grazing, random drainage systems, applications of lime and fertilizer, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. There are few limitations to woodland use. The soil when wet is soft, especially in early spring, and limits the use of heavy equipment to drier periods. Sugar maple, white ash, northern red oak, and black cherry are common on the soil.

The seasonal high water table is the main limitation of this soil on sites for dwellings. Erosion is also a hazard during construction. Interceptor drains placed upslope from buildings help divert runoff and seepage and prevent wet basements. Installing subsurface drains around foundations and adequately sealing basement walls also help prevent wet basements. Placing buildings in the higher areas of this map unit will avoid the problem of wetness. After construction, mulching and establishing a vegetative cover reduce runoff, stabilize the site, and control erosion.

The frost-action potential and the erosion hazard are the main limitations of this soil for local roads and streets. In some areas the seasonal high water table is a limitation. Providing coarse textured subgrade or base material to frost depth will reduce frost action. Constructing roads on raised fill material and installing a drainage system help prevent the road damage that both frost action and the water table cause. Road banks and ditches will erode unless revegetation protects them.

The seasonal high water table and slow percolation are the main limitations affecting the use of this soil as a site for septic tank absorption fields. Installing drainage around the area of the filter field and installing diversions to intercept water from the higher areas will lower the water table. Enlarging the trench below the distribution lines will improve percolation.

This soil is in capability subclass IIIe.

ChA—Chenango gravelly silt loam, loamy substratum, 0 to 3 percent slopes. This nearly level soil is very deep and well drained or somewhat excessively drained. It is on glacial outwash terraces.

Areas of this soil are round and range from 5 to 60 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 11 inches thick. The subsoil extends to a depth of 57 inches. The upper part is yellowish brown gravelly silt loam; the middle part is yellowish brown and brown very gravelly loam; and the lower part is very dark grayish brown and yellowish brown gravelly silt loam. The substratum is dark grayish brown and yellowish brown, stratified very gravelly silt loam to a depth of 74 inches or more.

Included with this soil in mapping, near seepage areas and slight depressions on the landscape, are small areas of the moderately well drained Castile soils. Also included, where varved silts and clay underlie the surface, are small areas of Castile and Rhinebeck soils. Also included are small areas that have poor stratification or silty layers over the gravel. Areas of included soils are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Chenango soil is at a depth of more than 5 feet in most areas. The soil is subject to rare flooding. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is moderate, and surface runoff is slow. The surface layer is strongly acid to slightly acid.

Most of the acreage is used for cultivated crops or hay.

This soil is well suited to most crops grown in the area. It ranks among the best suited soils in the county for food and fiber production. During prolonged dry periods this soil tends to become droughty. Irrigation may be needed, especially for shallow-rooted crops. Gravel fragments hinder some tillage operations. A conservation tillage system, cover crops, crop residue mixed into the soil, and crop rotation improve tilth and maintain organic matter content.

This soil is well suited to pasture, but midsummer droughtiness retards plant growth. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. Rock fragments slightly limit seedling planting. Planting early in spring when the soil is moist will improve seedling survival. Sugar maple and northern red oak are common on the soil.

Rare flooding is the main limitation of this soil on sites for dwellings with basements. Nearby soils that are higher on the landscape and not susceptible to flooding, such as the more sloping areas of Chenango soils, are better suited to this use.

The main limitations of this soil for local roads and streets are rare flooding and the frost-action potential. Constructing roads on fill composed of coarse-grained subgrade or base material raised above flood levels will reduce flood damage and frost action.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are rare flooding and slow percolation in the subsoil. Nearby soils that are not subject to flooding, such as the more sloping areas of Chenango soils, are better suited to this use.

This soil is in capability subclass IIs.

ChB—Chenango gravelly silt loam, loamy substratum, 3 to 8 percent slopes. This gently sloping soil is very deep and well drained to somewhat excessively drained. It is on glacial outwash terraces. Areas of this soil are long and narrow or broad and irregular and range from 5 to 50 acres in size.

Typically, the surface layer is dark brown gravelly silt loam about 11 inches thick. The subsoil extends to a depth of 57 inches. The upper part is yellowish brown gravelly silt loam; the middle part is yellowish brown and brown very gravelly loam; and the lower part is very dark grayish brown and yellowish brown gravelly silt loam. The substratum is dark grayish brown and yellowish brown, stratified very gravelly silt loam to a depth of 74 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Castile soils in slight depressions and along drainageways. Also included, where clay and silt varves underlie the surface, are small areas of Castile and Rhinebeck soils. Also included are small spots of the very poorly drained Carlisle and Palms soils. Also included are small areas where poor stratification or silty layers overlie the gravel. Areas of included soils are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Chenango soil is at a depth of more than 5 feet in most areas. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is moderate, and surface runoff is slow. The surface layer and subsoil are strongly acid or moderately acid.

Most of the acreage is used for cultivated crops or hay.

This soil is well suited to most crops grown in the area. It ranks among the best suited soils in the county for food and fiber production. It tends to be droughty during prolonged dry periods. In some years irrigation is needed, especially for shallow-rooted crops. Gravel fragments hinder some tillage operations.

Cover crops, a conservation tillage system, crop

residue mixed into the soil, and crop rotations improve tilth and maintain organic matter content.

This soil is well suited to pasture, but midsummer droughtiness retards plant growth. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. Rock fragments slightly limit seedling planting. Planting early in spring when the soil is moist will improve seedling survival. Sugar maple and northern red oak are common on the soil.

There are no limitations to use of this soil as a site for dwellings with basements.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on raised fill that consists of coarse-grained base material will reduce frost action.

The main limitation of this soil for septic tank absorption fields is slow percolation in the subsoil. Enlarging the trenches below the distribution lines will increase percolation.

This soil is in capability subclass IIs.

ChC—Chenango gravelly silt loam, loamy substratum, rolling. This rolling soil is very deep and well drained to somewhat excessively drained. It is on kames and terraces of glacial outwash plains. Areas of this soil are long and narrow or irregularly shaped, have short, complex slopes, and range from 5 to 70 acres. Slopes range from 8 to 15 percent.

Typically, the surface layer is dark brown gravelly silt loam about 11 inches thick. The subsoil extends to a depth of 57 inches. The upper part is yellowish brown gravelly silt loam; the middle part is yellowish brown and brown very gravelly loam; and the lower part is very dark grayish brown and yellowish brown gravelly silt loam. The substratum is dark grayish brown and yellowish brown, stratified very gravelly silt loam to a depth of 74 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Castile soils in depressions and along drainageways. Also included, where the soil is not stratified and the gravel content is lower, are some areas of Valois and Chautauqua soils. Also included are many places where the eroded surface layer is thinner and contains more gravel. Areas of included soils are as much as 3 acres and make up 10 percent of this map unit.

The seasonal high water table in this Chenango soil is at a depth of more than 5 feet. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the subsoil and moderately rapid in the substratum. Available water capacity is moderate. Surface runoff is medium. The surface layer and subsoil are strongly acid or moderately acid.

Most of the acreage is used for cultivated crops, hay, or pasture.

This soil is moderately suited to many crops grown in the area. Droughtiness in summer and the erosion hazard are the main limitations. Stripcropping, terracing, and other practices help control erosion. These practices, however, are generally difficult to establish because of the short, complex slopes, which are not easily tilled on the contour. A conservation tillage system that leaves residue on the surface after planting and crop rotations that include 1 or more years of close-growing crops help control erosion. Using cover crops and returning crop residue to the soil improve infiltration and increase soil moisture during dry periods.

This soil is moderately well suited to pasture. Droughtiness in summer may retard plant growth. Restricted grazing, especially during droughty periods, helps maintain the sod and control erosion. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. In some areas rock fragments are a problem when machine-planting seedlings. Sugar maple and northern red oak are common on the soil.

This soil has moderate limitations on sites for dwellings with basements because of the slope. The rolling landscape influences excavation costs. Designing dwellings to conform to the natural lay of the land or cutting and filling to establish benches help overcome the slope limitation. Erosion is a hazard during construction. Diverting runoff and mulching during construction help control erosion.

The main limitations of this soil for local roads and streets are the frost-action potential and the slope. Constructing roads on coarse-grained base material helps reduce frost action. Adapting road design to the natural slope or land shaping and grading help overcome the slope limitation.

The major limitations affecting the use of this soil as a site for septic tank absorption fields are the slow percolation in the subsoil and the slope. Installing distribution lines on the contour and using drop boxes or other structures to promote even distribution of the effluent will overcome the slope limitation. Enlarging the trenches below the distribution lines will increase percolation.

This soil is in capability subclass IIIe.

ChD—Chenango gravelly silt loam, loamy substratum, hilly. This hilly soil is very deep and well drained to somewhat excessively drained. It is on

escarpments and kames of glacial outwash terraces. Areas of this soil are irregular in shape and range from 5 to 80 acres. Slopes range from 15 to 25 percent.

Typically, the surface layer is dark brown gravelly silt loam about 11 inches thick. The subsoil extends to a depth of 57 inches. The upper part is yellowish brown gravelly silt loam; the middle part is yellowish brown and brown very gravelly loam; and the lower part is very dark grayish brown and yellowish brown gravelly silt loam. The substratum is dark grayish brown and yellowish brown stratified very gravelly silt loam to a depth of 74 inches or more.

Included with this soil in mapping, along valley sides that do not contain stratified gravelly material, are small areas of the well drained Valois soils and the moderately well drained Nunda soils. Also included are many places where the eroded surface layer is thinner and has more gravel. Areas of included soils are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Chenango soil is at a depth of 5 feet in most areas. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the subsoil and moderately rapid in the substratum. The available water capacity is moderate. Surface runoff is rapid. The surface layer and subsoil are strongly acid or moderately acid.

Most of the acreage is used for hay or pasture.

This soil is poorly suited to most cultivated crops because of moderately steep slopes and the severe erosion hazard. These hilly slopes are difficult to manage using modern farm equipment. Contour farming, terraces, and strip cropping are generally impractical on this soil because of the short slopes and irregular topography. Coarse gravel and cobblestones also interfere with cultivation. A conservation tillage system that leaves crop residue on the surface after planting and crop rotations that include several years of grasses or legumes help control erosion. Using cover crops, returning crop residue to the soil, and regularly adding organic matter will improve soil tilth.

This soil is moderately suited to pasture. Preventing overgrazing, especially during droughty periods, is the main pasture management concern. Overgrazing restricts plant growth and increases surface runoff and erosion. Proper stocking rates and rotation grazing help maintain the pasture and soil in good condition.

The potential productivity of this soil for sugar maple is moderate. The hilly topography limits the use of equipment in some areas. Constructing logging roads and skid trails across the slope wherever possible helps prevent gullying. Rock fragments and slope are problems when planting seedlings. Sugar maple and northern red oak are commonly on the soil.

The main limitation of this soil on sites for dwellings with basements is the slope. The hilly landscape increases excavation costs. Designing dwellings to conform to the natural lay of the land or cutting and filling to establish benches help overcome the slope limitation. Erosion is a hazard during construction. Maintaining a vegetative cover in the area adjacent to the dwelling site and diverting water from the construction site help control erosion.

The main limitation of this soil for local roads and streets is the hilly slope. It increases the cost of excavation and grading. Laying out the road on the slope or land shaping and grading help overcome the slope limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the slope. The slope limits the placement of tile in the filter fields. Also, lateral seepage and surfacing of effluent in downslope areas are hazards. Installing distribution lines on the contour and using drop boxes or other structures to promote the even distribution of effluent will reduce seepage.

This soil is in capability subclass IVe.

CkB—Chenango channery silt loam, fan, 3 to 8 percent slopes. This gently sloping soil is very deep and well drained to somewhat excessively drained. It is on the alluvial fans on uplands and on outwash plains and terraces. Areas of this soil are fan shaped and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown channery silt loam about 11 inches thick. The subsoil extends to a depth of 57 inches. The upper part is yellowish brown channery silt loam; the middle part is yellowish brown and brown very channery loam; and the lower part is very dark grayish brown and yellowish brown channery silt loam. The substratum is very channery silt loam to a depth of 74 inches. The coarse fragments in this soil generally consist of channers and flags in addition to pebbles and cobbles.

Included with this soil in mapping at the bottom of slopes or along the extremities of the fan's deltalike landform, are areas of the moderately well drained Castile soils. Also included are small areas of soils subject to frequent flooding. In many pedons of this soil, stratification is less pronounced. In some places the layers in the solum do not have rock fragments. Included areas are as much as 3 acres and make up about 10 to 15 percent of this map unit.

The seasonal high water table in this Chenango soil is at a depth of 3 to 5 feet in most areas. The soil is subject to rare flooding. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the subsoil and rapid in the substratum. The available

water capacity is low, and surface runoff is slow. The surface layer and subsoil are strongly acid or moderately acid.

Most areas of this soil are used for cultivated crops or hay.

This soil is well suited to most crops grown in the area. It is among the best suited soils in the county for food and fiber production. It tends to be droughty during prolonged dry periods. Irrigation may be needed, especially for shallow-rooted crops. Gravel fragments hinder some tillage operations. Cover crops, a conservation tillage system, crop residue mixed into the soil, and crop rotations improve tilth and increase water infiltration and available soil moisture during dry periods.

This soil is well suited to pasture, but midsummer droughtiness retards plant growth. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. Rock fragments are a slight limitation when planting seedlings. Sugar maple and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is rare flooding. Flooding is unlikely but can occur under unusual weather conditions. Selecting a higher area on the landscape will reduce the hazard of flood damage.

The main limitations of this soil for local roads and streets are rare flooding and the frost-action potential. Constructing roads on raised fill that consists of a coarse textured base material elevated above projected flood levels helps prevent the road damage that flooding causes.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are rare flooding and a poor filtering capacity in the substratum. The rapidly permeable substratum is a poor filter of effluent. Consequently, ground-water contamination is a hazard. Nearby soils, such as the more sloping areas of Chenango soils that are not subject to flooding, are better suited to this use.

This soil is in capability subclass IIs.

ClA—Claverack loamy fine sand, 0 to 3 percent slopes. This nearly level soil is very deep and moderately well drained. It is on sandy deltas that overlie stratified silts and clays. Areas of this soil are irregularly shaped and range from 3 to 35 acres in size.

Typically, the surface layer is dark brown loamy fine sand about 9 inches thick. The subsoil is yellowish brown and dark yellowish brown loamy fine sand about 17 inches thick. The substratum is brown, varved clay and silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the somewhat poorly drained Cosad soils in the slightly lower areas of the landscape. Also included, where textures are dominantly fine sandy loam over clayey sediments, are the moderately well drained Elmridge soils. Also included, where sand is very deep, are the moderately well drained Elnora soils and the somewhat poorly drained Stafford soils. In a few terraces above Normanskill Creek, the surface layer and subsoil have small amounts of gravel. Also, below an elevation of 160 feet, in most areas the substratum is dominantly silt that has thin varves of clayey material. Included areas are as much as 3 acres and make up 10 percent of this map unit.

The seasonal high water table in this Claverack soil is perched above the varved silts and clay at a depth of 1½ to 2 feet between November and May. Depth to bedrock is more than 60 inches. Permeability is rapid in the solum and slow or very slow in the substratum. The available water capacity is moderate, and surface runoff is slow. The surface layer ranges from strongly acid to neutral.

Most of the acreage is used as cropland, hayland, or pasture.

This soil is well suited to cultivated crops. It ranks among the best suited soils in the county for food and fiber production. In some areas the seasonal high water table is a limitation in early spring. In some areas droughtiness is a limitation during prolonged dry periods. Installing random subsurface drains in the wetter areas will lower the water table and allow earlier planting in some years. Diversion ditches will help channel surface runoff from the higher areas away from this soil. A conservation tillage system, returning crop residue to the soil, cover crops, and regularly adding organic material to the soil improve tilth and increase infiltration and available soil moisture during dry periods.

This soil is well suited to pasture. Droughtiness in summer in some years limits plant growth. Avoiding overgrazing helps prevent destruction of the desirable pasture plants. Rotation grazing, proper stocking rates, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. Sugar maple, northern red oak, and eastern white pine are commonly on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains installed on top of the varved silts and clays lower the water table. Protective coatings on basement walls can also prevent wet basements.

The main limitations of this soil for local roads and streets are a moderate frost-action potential and the seasonal high water table. Constructing roads on raised fill that consists of coarse textured base material will reduce both wetness and frost action.

The main limitations of this soil on sites for septic tank absorption fields are the seasonal high water table, poor filtering in the subsoil, and slow percolation in the substratum. A specially designed septic tank absorption field or an alternative system will properly filter effluent. An alternate system includes installing drainage around the filter field and diversions to intercept water from the higher areas.

This soil is in capability subclass IIw.

ClB—Claverack loamy fine sand, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on sandy deltas that overlie silts and clay. Areas of this soil are irregularly shaped and range from 3 to 40 acres in size.

Typically, the surface layer is dark brown loamy fine sand about 9 inches thick. The subsoil is yellowish brown and dark yellowish brown loamy fine sand about 17 inches thick. The substratum is brown, varved clay and silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Elnora and Elmridge soils. Elnora soils are in places where the sand is very deep. Elmridge soils are in areas where the subsoil is fine sandy loam. Also included, on the slightly higher knolls where the sand is very deep, are the well drained or somewhat excessively drained Colonie soils. Also included, in the slightly lower landscape positions, are small areas of the somewhat poorly drained Stafford and Cosad soils. Also included, in the town of Colonie, are areas of soils underlain by compact glacial till at a depth of 25 inches or more. Also included are areas of soils where the surface and subsurface layers have gravel. Below an elevation of 160 feet, in most areas of this soil the substratum is dominantly silt that has thin varves of clayey material. Areas of included soils are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Claverack soil perched above varved silts and clay, is at a depth of 1½ to 2 feet between November and May. Depth to bedrock is more than 60 inches. Permeability is rapid in the solum and slow or very slow in the substratum. The available water capacity is moderate, and surface runoff is slow. The surface layer is strongly acid to neutral.

Most of the acreage is used as cropland, hayland, or pasture.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. The seasonal high water table is a limitation in early spring. Also, droughtiness is a problem during prolonged dry periods. Random subsurface drains placed in wetter areas will lower the water table and allow earlier planting in some years. Diversion ditches will channel surface runoff from the higher areas away from this soil. Erosion is a limitation on some longer slopes if left unprotected. A conservation tillage system, returning crop residue to the soil, and cover crops will improve soil tilth and increase infiltration and soil moisture during dry periods.

This soil is well suited for pasture. In some years droughtiness in summer limits the growth of pasture grasses. Avoiding overgrazing helps prevent destruction of desirable pasture plants and helps control erosion on longer slopes. Rotation grazing, proper stocking rates, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Management problems are few. Sugar maple, northern red oak, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains on top of varved silt and clay lowers the seasonal high water table. Protective coatings on basement walls also help prevent wet basements.

The main limitations of this soil for local roads and streets are a moderate frost-action potential and the seasonal high water table. Constructing roads on raised fill composed of coarse textured base material will lower the seasonal high water table and reduce frost action.

The main limitations of this soil for septic tank absorption fields are the seasonal high water table, a poor filtering capacity in the subsoil, and slow percolation in the substratum. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will work on this soil.

This soil is in capability subclass IIw.

CoA—Colonie loamy fine sand, 0 to 3 percent slopes. This nearly level soil is very deep and well drained to somewhat excessively drained. It is on beaches, plains, and deltas. Areas of this soil are irregularly shaped and range from 3 to 200 acres in size but average 5 to 12 acres.

Typically, the surface layer is dark brown loamy fine sand about 7 inches thick. The subsoil is 61 inches thick. It is dark yellowish brown and yellowish brown loamy fine sand that has dark brown bands of loamy fine sand 1/32 to ½ inch thick. The substratum is brown loamy fine sand to a depth of 80 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Elnora soils, the somewhat poorly drained Stafford soils, and the poorly drained and very poorly drained Granby soils in depressions and low areas of the landscape. Also included are small areas of the moderately well drained Claverack soils where varved silt and clay are less than 40 inches deep. Also included are small spots where the surface layer is loamy very fine sand. Also included are some areas where the varves are thin layers of silt and sand. Areas of included soils are as much as 3 acres and make up 10 to 20 percent of this map unit.

The seasonal high water table in this Colonie soil is at a depth of more than 6 feet, but it can fluctuate to a depth of 3½ feet for very brief periods in early spring. Depth to bedrock is more than 60 inches. Permeability is moderately rapid or rapid. The available water capacity is low, and surface runoff is slow.

Most of the acreage of this soil is in industrial or urban use, but some areas are used for cultivated crops.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. It is also commonly used for fresh market vegetable crops, such as sweet corn, cabbage, tomatoes, peppers, and eggplants. Although this soil can be tilled early in spring, in most areas it is droughty because of the low available water capacity. Irrigation will increase yields. Wind erosion is a problem when the vegetative cover is removed. Crop residue left on the surface and windbreaks help control wind erosion. A conservation tillage system, cover crops, returning crop residue to the surface, and applications of manure increase water infiltration and organic matter content and improve the moisture-storing capacity of the soil.

This soil is well suited to pasture. Droughtiness restricts plant growth in summer. Rotation grazing, proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. Seedling mortality is high because of droughty periods during the growing season. Eastern white pine, northern red oak, and sugar maple are common on the soil.

This soil has no limitations on sites for dwellings and for local roads and streets. Droughtiness is a problem for establishing and maintaining lawns and shrubs.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. Permeability in this soil is moderately rapid or rapid, so the soil is a poor filter of effluent from septic tank absorption fields. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter effluent. Other soils that have moderate permeability are better suited to this use.

This soil is in capability subclass IIs.

CoB—Colonie loamy fine sand, 3 to 8 percent slopes. This gently sloping soil is very deep and well drained to somewhat excessively drained. It is on delta and beach plains. Areas of this soil are elliptical or irregularly shaped and range from 3 to 150 acres in size but average from 10 to 20 acres.

Typically, the surface layer is dark brown loamy fine sand about 7 inches thick. The subsoil is 61 inches thick. It is dark yellowish brown and yellowish brown loamy fine sand that has dark brown bands of loamy fine sand $\frac{1}{32}$ to ½ inch thick. The substratum is brown loamy fine sand to a depth of 80 inches or more.

Included within this soil in mapping are small areas of the moderately well drained Elnora soils at the base of slopes. Also included, especially in the Loudonville and Latham areas of the town of Colonie, are areas of moderately well drained, sandy soils that range from 20 to 40 inches thick over deposits of compact glacial till. Also included, where varved silt and clay are less than 40 inches deep, are small areas of Claverack soils. Small spots of loamy very fine sand are in the surface layer. In some areas the varves are thin layers of silt and sand. Included areas are as much as 3 acres and make up about 15 percent of this map unit.

The seasonal high water table in this Colonie soil is at a depth of more than 6 feet, but in some years it fluctuates to a depth of 3½ feet for very brief periods in early spring. Depth to bedrock is more than 60 inches. Permeability is moderately rapid or rapid. The available water capacity is low.

Most of the acreage of this soil is in industrial or urban use, but some areas are used for cultivated crops.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. It is also commonly used for fresh market vegetable crops, such as sweet corn, cabbage, tomatoes, peppers, and eggplants. Although the soil can be tilled early in spring, it is generally droughty because of the low available water capacity. Irrigation will increase yields. Wind erosion is a problem if the vegetative cover is removed. Crop residue left on the surface and windbreaks will control wind erosion. A conservation tillage system, cover crops, crop residue returned to the soil surface, and applications of manure will increase organic matter content and water infiltration and improve the moisture-storing capacity of the soil.

This soil is well suited to pasture. Droughtiness restricts plant growth in summer. Rotation grazing,

proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. Seedling mortality is high because of droughty periods during the growing season. Eastern white pine, northern red oak, and sugar maple are common on the soil.

This soil has no limitations on sites for dwellings and for local roads and streets. Droughtiness is a problem in establishing and maintaining lawns and shrubs.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. Permeability in this soil is moderately rapid or rapid, and the soil is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent. Other soils that have a moderate permeability rate are better suited to this use.

This soil is in capability subclass IIs.

CoC—Colonie loamy fine sand, rolling. This rolling soil is very deep and well drained to somewhat excessively drained. It is on deltas, dunes, and plains. Areas of this soil are long and narrow or irregularly shaped and range from 3 to 200 acres in size but are commonly 12 to 50 acres. Slopes range from 8 to 15 percent.

Typically, the surface layer is dark brown loamy fine sand about 7 inches thick. The subsoil is about 61 inches thick. It is yellowish brown and dark yellowish brown loamy fine sand that has dark brown bands of loamy fine sand 1/32 to 1/2 inch thick. The substratum is brown loamy fine sand to a depth of 80 inches or more.

Included with this soil in mapping, where varved silt and clay are less than 40 inches deep, are small areas of the moderately well drained Claverack soils. Also included, especially in the Loudonville and Latham areas of the town of Colonie, are areas of moderately well drained, sandy soils that are 20 to 40 inches over deposits of compact glacial till. Also included, in depressions and drainageways, are small areas of the poorly drained and very poorly drained Granby soils. Also included, in areas that have thin bands of silt, are some less sloping areas of Colonie soils. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Colonie soil is at a depth of more than 6 feet, but it may fluctuate to within 3½ feet of the surface for very brief periods in early spring. Depth to bedrock is more than 60 inches. Permeability is moderately rapid or rapid. The available water capacity is low, and surface runoff is medium.

Most of the acreage is in the Pine Bush and is brushland.

This soil is moderately suited to many cultivated crops. Droughtiness is a problem in summer because of the low available water capacity. Irrigation will increase yields, but designing irrigation systems on some rolling soil areas is difficult. Also, if the vegetative cover is removed or plowed under, erosion and soil blowing are hazards. A conservation tillage system, cover crops, returning crop residue to the soil surface, applications of manure, and crop rotation increase organic matter content and water infiltration, and improve the water-storing capacity of the soil. A conservation tillage system and crop rotation will also help control erosion. Crop residue left on the surface and windbreaks will reduce soil blowing.

This soil is moderately well suited to pasture. Droughtiness in summer will cause slow plant growth. Overgrazing may result in erosion and poor forage. Rotation grazing, proper stocking rates, weed control, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. Seedling mortality is high because of droughty conditions during the growing season. Eastern white pine, northern red oak, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the excessive slope on rolling topography. Designing dwellings to conform to the natural slope or landscaping helps overcome this limitation.

The main limitation of this soil for local roads and streets is the slope. Grading and excavation costs are higher than in lesser sloping areas of Colonie soils. Constructing roads on the contour wherever possible or landshaping and grading help overcome the slope limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. This soil has a moderately rapid or rapid permeability and so is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent. Other soils that have a moderate permeability rate are better suited to this use.

This soil is in capability subclass IIIe.

CoD—Colonie loamy fine sand, hilly. This soil is very deep and well drained to somewhat excessively drained. It is on low convex hills and ridges, and on escarpments adjacent to steep valley sides. Areas of

Figure 8.—An area of Colonie loamy fine sand, hilly, on a beach ridge in the Pine Bush. The vegetation is pitch pine with an understory of brush.

this soil range from elliptical to long and narrow and are 3 to 50 acres in size. Slopes range from 15 to 25 percent.

Typically, the surface layer is dark brown loamy fine sand about 7 inches thick. The subsoil is 61 inches thick. It is dark yellowish brown and yellowish brown loamy fine sand that has dark brown bands of loamy fine sand 1/32 to 1/2 inch thick. The substratum is brown loamy fine sand to a depth of 80 inches or more.

Included with this soil in mapping are small areas of moderately well drained Elnora soils and somewhat poorly drained Stafford soils in depressions between hilly landforms. Also included, in some areas where the soil has a high content of silt and clay, are small areas of the well drained Unadilla soils and the moderately well drained Hudson soils. Also included are areas where the eroded surface layer is thinner than that of the Colonie soil and areas where the subsoil has thin silty bands. Areas of included soils are as much as 3 acres and make up 20 percent of this map unit.

The seasonal high water table in this Colonie soil is at a depth of more than 6 feet, but it may fluctuate to a depth of 40 inches for very brief periods in early spring. Depth to bedrock is more than 60 inches. Permeability is moderately rapid to rapid. The available water capacity is low, and surface runoff is rapid.

Most of the acreage is used as brushland or woodland (fig. 8).

This soil is poorly suited to cultivated crops because of the hilly slopes and low available soil moisture. Erosion is also a hazard. Irrigation is generally not feasible during periods of summer droughtiness because of the hilly slopes. If cultivated crops are grown, a cropping system that includes a conservation tillage system and crop rotations with several years of grasses or legumes help control erosion. Returning crop residue to the soil, regularly adding organic material to the soil, and growing covercrops will increase infiltration and available soil moisture.

This soil is moderately suited to pasture. Droughtiness restricts growth in summer, and erosion is a hazard along slopes with little or no vegetative cover. Rotation grazing, proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. The hilly slopes are a moderate equipment limitation. The soil has droughty periods during the growing season, and seedling mortality is high. Eastern white pine, northern red oak, sugar maple, and white oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the slope. Designing dwellings to conform to the natural slope and cutting and filling to establish benches will help overcome the slope limitation. Erosion is a hazard during construction. Removing a minimum area of vegetative cover and diverting runoff during construction help control erosion.

The main limitation of this soil for local roads and streets is the slope. The slope increases the cost of grading and excavating. Constructing roads on the contour wherever possible or land shaping and grading help overcome the slope limitation. In some areas, if the vegetative cover has been removed, wind erosion is a hazard.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the slope. This soil is moderately rapidly or rapidly permeable and is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent. In most areas land shaping is needed to install the distribution lines on the contour. Other soils are less sloping and are moderately permeable and are better suited to this use.

This soil is in capability subclass IVe.

CoE—Colonie loamy fine sand, very hilly. This steep and very steep soil is very deep and well drained to somewhat excessively drained. It is on the side slopes of drainageways within plains and deltas. Areas of this soil are generally irregularly shaped following the dendritic pattern of the streams and range from 3 to 75 acres in size. Slopes range from 25 to 50 percent.

Typically, the surface layer is dark brown loamy fine sand about 7 inches thick. The subsoil is 61 inches thick. It is dark yellowish brown and yellowish brown loamy fine sand and has bands of dark brown loamy fine sand 1/32 to 1/2 inch thick. The substratum is brown loamy fine sand to a depth of 80 inches or more.

Included with this soil in mapping, where textures range toward very fine sandy loam, are areas of the moderately well drained Hudson soils on the lower end of the slope and the well drained Unadilla soils on the upper end of the slope. Also included are small areas of Fluvaquents-Udifluvents on the bottom of steep drainageways along the flood plains of streams. Also included are areas where the eroded surface layer is thinner than that of the Colonie soil and areas where the subsoil has bands of silt. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Colonie soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderately rapid to rapid. The available water capacity is low, and surface runoff is rapid.

Most of the acreage is in the Pine Bush and is woodland or brushland.

This soil is not suited to cultivated crops because of the slope, the erosion hazard, and the droughtiness. The use of farm machinery is impractical and dangerous. This soil is not suited to pasture because of summer droughtiness and the slope.

The potential productivity of this soil for eastern white pine is very high. The slope is a moderate limitation to use of equipment. Seedling mortality is high because of droughtiness. Eastern white pine, northern red oak, sugar maple, and white oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the slope. Adjacent areas of Colonie soils that are less sloping are better suited to use as sites for dwellings.

The main limitation of this soil for local roads and streets is the slope. This increases the cost of grading and excavating. Constructing roads on the contour wherever possible or landshaping helps overcome the slope limitation. In areas without vegetative cover, wind and water erosion are hazards.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the slope and a poor filtering capacity. This soil is rapidly permeable and is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed

septic tank absorption field or an alternative system will properly filter the effluent. Other less sloping soils that have a moderate permeability rate are better suited to this use.

This soil is in capability subclass VIIe.

Cs—Cosad loamy fine sand. This nearly level soil is very deep and somewhat poorly drained. It is in slightly depressional areas and on low-lying plains. Areas of this soil are broad and irregularly shaped and range from 3 to 60 acres. Slopes range from 0 to 3 percent.

Typically, the surface layer is very dark grayish brown loamy fine sand about 9 inches thick. The subsoil extends to a depth of 26 inches. The upper part of the subsoil is mottled brown loamy fine sand, and the lower part is mottled dark brown loamy sand. The substratum is gray silty clay to a depth of more than 60 inches. It has thin layers of silt loam and very fine sandy loam.

Included with this soil in mapping are small areas of the moderately well drained Claverack soils on the slightly higher parts of the landscape. Also included are small areas of Elmridge and Shaker soils, which have less sand in the subsoil than the Cosad soil. Stafford soils are included in places where the sand is deeper. Along the Normanskill Creek are small areas that have gravel in the solum. Also, in some areas the stratified silty clay is at a depth of more than 40 inches. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Cosad soil is perched above the clayey substratum, at a depth of ½ foot to 1½ feet between November and May. Depth to bedrock is 60 inches or more. Permeability is rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate.

Most of the acreage of this soil is woodland or brushland.

This soil is moderately suited to cultivated crops. In some years the seasonal high water table delays planting operations. A combination of subsurface drains and open ditch drainage will lower the water table. However, drainage outlets for tile are generally difficult to establish because of this soil's depressional or basinlike topography. A conservation tillage system, cover crops, and tillage at proper moisture levels will help maintain soil tilth and organic matter content.

This soil is moderately well suited to pasture. Grazing during early spring and other wet periods will cause surface compaction and subsequent loss of desirable forage. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. The seasonal high water table restricts root growth and results in a moderate seedling mortality and windthrow hazard. The water table creates a soft soil surface under such heavy loads as planting and harvesting machines and causes a moderate equipment limitation. Red maple and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Open ditches, foundation drains, and protective coatings on basement walls help overcome this limitation.

The main limitation of this soil for local roads and streets is the seasonal high water table. Constructing roads on raised fill material and installing drainage will reduce wetness and increase soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. A specially designed septic tank absorption field with drainage around the site will properly filter effluent. The better drained included soils in this unit are better suited to this use.

This soil is in capability subclass IIIw.

Du—Dumps. This map unit consists of sanitary landfills, industrial dumps, and other sites that have been used for the disposal of trash and rubble. Areas of this unit range in size from 3 to 100 acres and are mainly near urban areas. Slopes vary in these areas but are generally less than 5 percent at the top of the landfill and range to 25 percent on side slopes.

The material deposited in these areas, instead of soil, is generally paper, building materials, tree stumps, rock and concrete fragments, tires, junked cars, commercial refuse, and industrial tailings.

Permeability, the available water capacity, soil tilth, and other properties vary considerably with the deposited refuse and cover material.

These sites have no potential for agricultural uses. Urban and recreation uses are possible, but an onsite investigation is needed to determine site potential.

A capability subclass is not assigned.

ElA—Elmridge fine sandy loam, 0 to 3 percent slopes. This nearly level soil is very deep and moderately well drained. It is in flat areas on glacial lake plains. Areas of this soil are irregularly shaped and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 9 inches thick. The subsoil is 19 inches thick. The upper part is yellowish brown fine sandy loam; the middle part is yellowish brown loamy fine

sand; and the lower part is mottled, dark yellowish brown light olive brown clay loam. The substratum extends to a depth of 60 inches or more. It is mottled, reddish brown, brown, and pinkish gray silty clay or clay that has varves of grayish brown fine sand.

Included with this soil in mapping are small areas of the somewhat poorly drained and poorly drained Shaker soils in the slightly lower positions. Also included are the moderately well drained Claverack soils and the somewhat poorly drained Cosad soils, both of which are loamy fine sand to sand in the subsoil. Also included are some areas of Elmridge soils that have thin strata of silt, very fine sand, and clay in the substratum. Areas of Elmridge soils that have a small amount of gravel in the surface layer and subsoil are along Normanskill Creek. Below an elevation of 160 feet, the substratum is dominantly silt that has thin varves of clayey material. Areas of included soils are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Elmridge soil is at a depth of 1½ to 3 feet, perched above the clayey substratum between November and May. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the loamy material and slow or very slow in the clayey material. The available water capacity is high, and surface runoff is slow. The surface layer is very strongly acid to slightly acid.

Most of the acreage is used for cultivated crops, hay, or pasture. A small acreage is used as brushland.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. The seasonal high water table may be a problem in early spring. Random subsurface drains placed in the wetter areas of this soil will improve drainage. Diversion ditches will channel surface runoff from the higher areas away from this soil. A conservation tillage system, crop rotations, and returning crop residue to this soil help maintain organic matter levels and improve soil tilth.

This soil is well suited to pasture. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. Management problems are few. Eastern white pine, northern red oak, and white oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains installed above the slowly permeable substratum lower the water table. Protective coatings on basement walls prevent wet basements.

The main limitations of this soil for local roads and streets are low strength and the frost-action potential. Constructing roads on raised fill composed of coarse textured base material will improve soil strength and reduce frost action.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation in the substratum. A specially designed septic tank absorption field or an alternative system will adequately filter effluent. Installing drainage around the filter field and diversions to intercept water from the higher areas will reduce wetness. Enlarging the trench below the distribution lines will improve percolation.

This soil is in capability subclass IIw.

ElB—Elmridge fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on glacial lake plains. Areas of this soil are irregularly shaped and range from 3 to 35 acres.

Typically, the surface layer is dark brown fine sandy loam about 9 inches thick. The subsoil is 19 inches thick. The upper part is yellowish brown fine sandy loam; the middle part is yellowish brown, mottled loamy fine sand; and the lower part is dark yellowish brown and light olive brown, mottled clay loam. The substratum extends to a depth of 60 inches or more. It is reddish brown, brown, and pinkish gray, mottled silty clay or clay that has varves of grayish brown fine sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Shaker soils in the slightly lower positions on the landscape. Also included are areas of the sandier Claverack soils. Areas of soils that have small amounts of gravel in the surface layer and subsoil are along Normanskill Creek. Below an elevation of 160 feet, the substratum tends to be dominantly silt that has thin varves of clayey material. Areas of included soils are as much as 3 acres and make up 10 percent of this map unit.

The seasonal high water table in this Elmridge soil is at a depth of 1½ to 3 feet, perched above the clayey substratum between November and May. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the loamy material and slow or very slow in the clayey material. The available water capacity is high, and surface runoff is slow. The surface layer is very strongly acid to slightly acid.

Most of the acreage is used for cultivated crops, hay, or pasture.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. The seasonal high water table is a problem in early spring. Random subsurface drains placed in wetter areas of this soil will improve drainage. Erosion may be a hazard on long slopes unless conservation practices protect them. A conservation tillage system,

crop rotations, and returning crop residue to the soil help maintain organic matter levels and improve soil tilth.

This soil is well suited to pasture. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. Woodland management problems are few. Eastern white pine, northern red oak, and white oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains installed above the slowly permeable substratum will lower the seasonal high water table. Protective coatings on basement walls will prevent wet basements.

The main limitations of this soil for local roads and streets are low strength and the frost-action potential. Constructing roads on raised fill composed of coarse textured base material will increase soil strength and reduce frost action.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation in the substratum. A specially designed septic tank absorption field or an alternative system will adequately filter effluent. Installing drainage around the filter field and diversions to intercept water from the higher areas will reduce wetness. Enlarging the trench below the distribution lines will improve percolation.

This soil is in capability subclass IIw.

EnA—Elnora loamy fine sand, 0 to 3 percent slopes. This nearly level soil is very deep and moderately well drained. It is on deltas and glacial lake plains. Areas of this soil are irregularly shaped and range from 3 to 250 acres.

Typically, the surface layer is dark brown loamy fine sand about 8 inches thick. The subsurface layer is very dark gray loamy fine sand about 3 inches thick. The subsoil is yellowish brown fine sand about 16 inches thick. The substratum extends to a depth of 65 inches or more. It is brown loamy very fine sand that overlies dark gray loamy fine sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Stafford soils and the poorly drained or very poorly drained Granby soils in drainageways and slight depressions. Small areas of the well drained or excessively drained Colonie soils are in the slightly higher positions on the landscape. In the town of Guilderland a few areas have more medium and coarse sand in the profile than the Elnora soil. In some areas near Normanskill Creek, small amounts of gravel are in the profile. In some areas soils similar to the Elnora soil have finer textures, such as fine sandy loam to silty clay loam, in thin layers within a depth of 40 inches. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in the Elnora soil is at a depth of 1½ to 2 feet from February to May. Depth to bedrock is more than 60 inches. Permeability is moderately rapid or rapid. The available water capacity is low, and surface runoff is slow. The surface layer ranges from very strongly acid to slightly acid.

Most of the acreage is in the Pine Bush and is commonly woodland or brushland. Some areas are in residential or industrial development.

This soil is moderately suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. In some years the seasonal high water table delays planting and cultivation. Random subsurface drains will lower the water table. In some areas droughtiness is a problem in summer. Wind erosion is a problem unless a vegetative cover protects the surface. A conservation tillage system, cover crops, and returning crop residue and adding animal manure to the soil will increase water infiltration and soil moisture during dry periods. Leaving crop residue on the surface and windbreaks help control wind erosion.

This soil is moderately well suited to pasture, but droughtiness limits growth in midsummer. Proper stocking rates, rotation grazing, and restricted grazing in dry periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderate. Seedling mortality is severe because of the low water-holding capacity and the fluctuating seasonal high water table. Eastern white pine, northern red oak, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains, applying protective coatings to basement walls, and diverting surface water away from dwellings help prevent wet basements.

The main limitations of this soil for local roads and streets are a moderate frost-action potential and the seasonal high water table. Adequate drainage of surface water and constructing the road on a coarse textured subgrade or base material help overcome these limitations.

The main limitations of this soil on sites for septic tank absorption fields are the seasonal high water table and a poor filtering capacity. This soil is rapidly permeable and is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will adequately filter the effluent. Other less sandy soils in the higher landscape positions are better suited to this use.

This soil is in capability subclass IIIw.

EnB—Elnora loamy fine sand, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on deltas and glacial lake plains. Areas of this soil are irregularly shaped and range from 3 to 15 acres.

Typically, the surface layer is dark brown loamy fine sand about 8 inches thick. The subsurface layer is very dark gray loamy fine sand about 3 inches thick. The subsoil is yellowish brown fine sand about 16 inches thick. The substratum extends to a depth of 65 inches or more. It is brown loamy very fine sand that overlies dark gray loamy fine sand.

Included with this soil in mapping are small areas of the somewhat poorly drained Stafford soils and the poorly drained to very poorly drained Granby soils in drainageways and slight depressions. The well drained to somewhat excessively drained Colonie soils are in small areas in the slightly higher positions on the landscape. In some areas near Normanskill Creek, small amounts of gravel are in the soil profile. In some areas soils similar to the Elnora soil have finer textures, such as fine sandy loam to silty clay loam, in thin layers within a depth of 40 inches. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Elnora soil is at a depth of 1½ to 2 feet from February to May. Depth to bedrock is more than 60 inches. Permeability is moderately rapid or rapid. The available water capacity is low, and surface runoff is slow or medium. The surface layer is very strongly acid to neutral.

Much of this soil is in the Pine Bush and is commonly in woodland or brushland. Some areas are in residential or industrial development.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. In some years the seasonal high water table delays planting and cultivation. Subsurface drains will lower the water table. In some areas droughtiness is a problem in summer. Wind erosion is a problem unless a vegetative cover protects the surface. A conservation tillage system, cover crops, and returning crop residue and adding animal manure to the soil improve the organic matter content and increase the available water capacity.

This soil is moderately well suited to pasture, but droughtiness restricts growth in midsummer. Proper stocking rates, rotation grazing, and restricted grazing in dry periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderate. Seedling mortality is severe because of the low water-holding capacity and fluctuating seasonal high water table. Eastern white pine, northern red oak, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains, applying protective coatings to basement walls, and diverting surface water away from dwellings help prevent wet basements.

The main limitations of this soil for local roads and streets are a moderate frost-action potential and the seasonal high water table. Adequate surface drainage and constructing the road on coarse textured subgrade or base material help control these limitations.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and a poor filtering capacity. This soil is rapidly permeable and so is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will adequately filter the effluent. Other less sandy soils in the higher landscape positions are better suited to this use.

This soil is in capability subclass IIIw.

FaB—Farmington silt loam, 0 to 8 percent slopes. This nearly level and gently sloping soil is shallow and well drained and somewhat excessively drained. It is on bedrock-controlled landforms associated mainly with limestone. These areas are irregularly shaped and range from 5 to 100 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is dark brown and dark yellowish brown silt loam about 10 inches thick. Gray limestone bedrock is at a depth of 19 inches.

Included with this soil in mapping are small areas of soils overlying sandstone bedrock at a depth of 10 to 20 inches. Small areas of the well drained and moderately well drained, moderately deep Wassaic soils are also included. Also included, in some places, are small areas of soils that are very shallow to bedrock. Also, some areas of soils that are deep to bedrock are included, particularly on undulating landscapes. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Farmington soil is at a depth of more than 6 feet, but during some intensive rainfalls it is near the surface in bedrock crevices for brief periods. Depth to bedrock is 10 to 20 inches. It restricts the rooting depth of plants. Permeability is moderate. The available water capacity is low, and surface runoff is slow. The surface layer is strongly acid to slightly acid, but it varies in reaction with local liming practices.

Most areas of this soil are used for cultivated crops or hay.

This soil is moderately suited to cultivated crops. The

shallow depth to bedrock is a problem for some tillage operations and causes droughtiness. During droughty periods, some crops, such as corn, may show moisture stress because of the low available water capacity. Erosion is a hazard on long slopes where the vegetative cover has been disturbed. A conservation tillage system, cover crops, and returning crop residue to the soil help maintain soil moisture and tilth.

This soil is moderately well suited to pasture, although midsummer droughtiness limits forage growth. Drought-tolerant grasses are suitable when reseeding the pasture. Proper stocking rates, rotation grazing, and yearly mowing help to keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The shallow depth to bedrock restricts root growth, results in a low water-holding capacity, and causes a high rate of seedling mortality. Windthrow is a moderate hazard because of the restricted root growth, except in areas where roots can penetrate crevices. Sugar maple, northern red oak, eastern white pine, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the shallow depth to bedrock. Included areas in this map unit and the nearby soils, such as Wassaic and Nunda soils, that are deeper to bedrock are better suited to this use. The shallow depth to bedrock is less of a limitation on sites for dwellings without basements. Adding fill material and grading to modify the site help overcome this limitation.

The main limitation of this soil for local roads and streets is the shallow depth to bedrock. Careful planning of road grades and locations help avoid removal of bedrock. Constructing roads on raised fill as needed also helps overcome this limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. Also, ground-water contamination is a hazard in areas of creviced or jointed bedrock. Adding soil material suitable for an absorption field is needed. Other soils, such as the deep included soils, are better suited to this use.

This soil is in capability subclass IIIe.

FrB—Farmington-Rock outcrop complex, 0 to 8 percent slopes. This unit consists of a nearly level and gently sloping, shallow Farmington soil and areas where bedrock is exposed at the surface. The unit is on bedrock-controlled landforms associated with limestone bedrock. Small steps or small bedrock escarpments break smooth, undulating slopes. The Farmington soil is well drained and somewhat excessively drained. This unit is about 50 percent Farmington soil, 25 percent Rock outcrop, and 25 percent other soils. The Farmington soil and Rock outcrop are in such intricate patterns on the landscape that they were not separated in mapping. Areas of this unit are long or irregularly shaped and range from 3 to 60 acres.

Typically, the surface layer of the Farmington soil is dark brown silt loam about 9 inches thick. The subsoil is dark brown and dark yellowish brown silt loam about 10 inches thick. Gray limestone bedrock is at a depth of 19 inches. Rock outcrops are dominantly jointed or creviced gray limestone.

Included with this unit in mapping are small areas of the moderately deep Wassaic soils. Small areas of somewhat poorly drained soils are also included. Sink holes and deep cracks are common in this map unit. Some areas of siltstone, sandstone, and shale crop out in this unit. Included areas are as much as 3 acres and make up 25 percent of this map unit.

Depth to bedrock in the Farmington soil is 10 to 20 inches. It restricts the rooting depth of plants. Permeability is moderate throughout. Available water capacity is low and surface runoff is slow on the Farmington soil. Available water capacity and surface runoff vary in the areas of Rock outcrop, depending on the presence and number of crevices in the limestone bedrock. The surface layer of the Farmington soil is strongly acid to slightly acid.

Most of the acreage of the unit is woodland or pasture.

The Farmington soil is not suited to cultivated crops. The shallow depth to bedrock, rock outcrops, and small ledges are serious limitations to use of tillage and planting equipment. Bedrock restricts rooting depth and causes midsummer droughtiness in many areas.

The Farmington soil is poorly suited to restricted pasture. Midsummer droughtiness, shallow soil, and areas of rock outcrop can result in low forage density. Proper stocking rates, rotation grazing, and restricted use during dry periods help keep the pasture in good condition.

The potential productivity of the Farmington soil for sugar maple is moderate. Seedling mortality is a severe limitation because the shallow depth to bedrock restricts root growth and results in low water-holding capacity. Windthrow is a moderate limitation because of restricted root growth, except in spots where roots can penetrate crevices. Rock outcrops and scattered small ledges somewhat limit machine planting of seedlings. Sugar maple, northern red oak, eastern white pine, and eastern hemlock are common on the soil.

The main limitation of the Farmington soil for dwellings with basements is the shallow depth to bedrock. Included areas of soils and nearby soils, such as Nunda and Wassaic soils, that are deeper to bedrock are better suited to this use. The shallow depth

to bedrock is less of a limitation on sites for dwellings without basements. Adding fill material and grading to modify the site help overcome this limitation.

The main limitations of the Farmington soil for local roads and streets are the shallow depth to bedrock, bedrock exposures, and small ledges. Careful placement of roads and planning of road grades will eliminate some bedrock removal. Constructing roads on raised fill material, especially in areas of rock outcrop, helps overcome this limitation.

The main limitation affecting the use of the Farmington soil as a site for septic tank absorption fields is the shallow depth to bedrock. Also, ground-water contamination is a hazard in areas of creviced or jointed bedrock. Adding soil material suitable for an absorption field is needed. Other nearby soils that are deep and well drained are better suited to this use.

The Farmington soil is in capability subclass VIs.

FrC—Farmington-Rock outcrop complex, 8 to 15 percent slopes. This unit consists of a strongly sloping, shallow Farmington soil and areas where bedrock is exposed at the surface. The unit is on bedrock-controlled landforms associated mainly with limestone bedrock. Bedrock exposures and ledges break smooth, sloping areas. The Farmington soil is well drained and somewhat excessively drained. This unit is about 45 percent Farmington soil, 25 percent Rock outcrop, and 30 percent other soils. The Farmington soil and Rock outcrop are in such an intricate pattern on the landscape that they were not separated in mapping. Areas of this unit are long or irregularly shaped and range from 3 to 60 acres.

Typically, the surface layer of the Farmington soil is dark brown silt loam about 9 inches thick. The subsoil is dark brown and dark yellowish brown silt loam about 10 inches thick. Gray limestone bedrock is at a depth of 19 inches. Rock outcrops are mostly jointed or creviced gray limestone.

Included with this unit in mapping are small areas of the moderately deep Wassaic soils. Also included are some areas of very deep soils similar to Valois soils. Small areas of very shallow soils are included between the Farmington soil and Rock outcrop. Siltstone, sandstone, and shale crop out in some areas. Included areas are as much as 3 acres in size and make up 30 percent of this map unit.

Depth to bedrock in the Farmington soil is 10 to 20 inches. It restricts rooting depth of plants. Permeability is moderate throughout. Available water capacity is low and surface runoff is medium on the Farmington soil. Available water capacity and surface runoff vary on the areas of Rock outcrop, depending on the presence and number of crevices in the limestone bedrock in the area. The surface layer of the Farmington soil is strongly acid to slightly acid.

Most of the acreage of the unit is woodland or pasture.

The Farmington soil is not suited to cultivated crops. The shallow depth to bedrock, rock outcrops, and small ledges are serious limitations to use of tillage and planting equipment. Bedrock restricts rooting depth and causes midsummer droughtiness in many areas. Erosion is a severe hazard if cultivated crops are grown.

The Farmington soil is poorly suited to restricted pasture. Midsummer droughtiness, shallow soil, and areas of rock outcrop can result in low forage density. Proper stocking rates, rotation grazing, and restricted use during dry periods help keep the pasture in good condition.

The potential productivity of the Farmington soil for sugar maple is moderate. Seedling mortality is a severe limitation because the shallow depth to bedrock restricts root growth and results in low water-holding capacity. Windthrow is a moderate limitation because of restricted root growth, except in spots where roots can penetrate crevices. Rock outcrops and scattered small ledges somewhat limit machine-planting seedlings. Sugar maple, northern red oak, eastern white pine, and eastern hemlock are common on the soil.

The main limitation of the Farmington soil on sites for dwellings with basements is the shallow depth to bedrock. Included areas of soils and nearby soils, such as Nunda and Wassaic soils, that are deeper to bedrock are better suited to this use. The shallow depth to bedrock is less of a limitation on sites for dwellings without basements. Adding fill material and grading to modify the site help overcome this limitation.

The main limitations of the Farmington soil for local roads and streets are the shallow depth to bedrock, bedrock exposure, and small ledges. Careful placement of roads and planning of road grades will avoid some bedrock removal. Constructing roads on raised fill material, especially in areas of rock outcrop, helps overcome this limitation.

The main limitation affecting the use of the Farmington soil as a site for septic tank absorption fields is the shallow depth to bedrock. Also, ground-water contamination is a hazard in areas of creviced or jointed bedrock. Adding soil material suitable for an absorption field is needed. Other nearby soils that are deep and well drained are better suited to this use.

The Farmington soil is in capability subclass VIs.

FrF—Farmington-Rock outcrop complex, 25 to 60 percent slopes. This unit consists of a steep and very steep Farmington soil and areas of exposed bedrock.

The unit is on bedrock-controlled landforms associated with mainly limestone bedrock. Bedrock exposures and ledges break steep sloping areas. The Farmington soil is well drained and excessively drained. This unit is about 45 percent Farmington soil, 30 percent Rock outcrop, and 25 percent other soils. The Farmington soil and Rock outcrop are in such an intricate pattern on the landscape that they were not separated in mapping. Areas of this unit are long and narrow and range from 3 to 60 acres.

Typically, the surface layer of the Farmington soil is dark brown silt loam about 9 inches thick. The subsoil is dark brown and dark yellowish brown silt loam about 10 inches thick. Gray limestone bedrock is at a depth of 19 inches. Rock outcrops are dominantly jointed or creviced gray limestone.

Included with this unit in mapping are small areas of the moderately deep Wassaic soils. Small areas of very shallow soils are included between the Farmington soil and Rock outcrop. Siltstone, sandstone, and shale rock outcrops are included in some areas. Included areas are as much as 3 acres and make up 25 percent of this map unit.

Depth to bedrock in the Farmington soil is 10 to 20 inches. It restricts rooting depth. Permeability is moderate throughout. Available water capacity is low, and surface runoff is rapid or very rapid. The surface layer of the Farmington soil is strongly acid to slightly acid.

Most of the acreage of the unit is woodland or pasture.

The Farmington soil is not suited to cultivated crops. The shallow depth to bedrock, rock outcrops, and steep ledges are serious limitations to use of tillage and planting equipment. Bedrock restricts rooting depth and causes midsummer droughtiness in many areas. In areas of disturbed soil, water erosion is a severe hazard.

The Farmington soil is not suited to pasture. Midsummer droughtiness, shallow depth to bedrock, the slopes, and areas of rock outcrop result in poor forage.

The potential productivity of the Farmington soil for sugar maple is moderate. Seedling mortality is a severe limitation because the shallow depth to bedrock restricts root growth and results in low water-holding capacity. Windthrow is a moderate limitation because of restricted root growth, except in spots where roots can penetrate crevices. Steep rock ledges and the slope restrict machine planting of seedlings. Erosion is a severe hazard where logging has disturbed areas of soil. Sugar maple, northern red oak, eastern white pine, and eastern hemlock are common on the soil.

The main limitations of the Farmington soil on sites for dwellings with basements are the shallow depth to bedrock and the slope. Included soils in this map unit and nearby soils that are deeper to bedrock and less sloping are better suited to this use. Also, the less sloping areas of the Farmington soil are better suited to this use.

The main limitations of the Farmington soil for local roads and streets are the shallow depth to bedrock and the slope. Roads should be planned around this map unit wherever possible. Designing roads to conform to the shape of the land and constructing them on raised fill help overcome these limitations.

The main limitations affecting the use of the Farmington soil as a site for septic tank absorption fields are the shallow depth to bedrock and the slope. Also, ground-water contamination is a hazard in areas of limestone crevices. Other soils are better suited to filtering effluent.

The Farmington soil is in capability subclass VIIs.

FwC—Farmington-Wassaic-Rock outcrop complex, rolling. This unit consists of a rolling, shallow Farmington soil, a moderately deep Wassaic soil, and areas of exposed bedrock. The unit is on till plains in the bedrock-controlled landscapes of the towns of Berne, Knox, New Scotland, and Coeymans. The Farmington soil is well drained and somewhat excessively drained. The Wassaic soil is well drained and moderately well drained. The unit is 35 percent Farmington soil, 30 percent Wassaic soil, 15 percent Rock outcrop mainly on the tops of slopes, and 20 percent other soils. Areas of this unit are broad and irregularly shaped and range from 3 to 40 acres. Slopes range from 8 to 15 percent.

Typically, the surface layer of the Farmington soil is dark brown silt loam about 9 inches thick. The subsoil is dark brown and dark yellowish brown silt loam about 10 inches thick. Gray limestone bedrock is at a depth of 19 inches.

Typically, the surface layer of the Wassaic soil is dark brown silt loam about 9 inches thick. The subsoil extends to a depth of 30 inches. In the upper part it is yellowish brown and dark yellowish brown loam. In the lower part it is dark yellowish brown, mottled silty clay loam. Gray limestone bedrock is at a depth of 20 inches.

Included with this unit in mapping are small areas of soils overlying sandstone bedrock at a depth of 10 to 20 inches. Also included are areas of the very deep, well drained Nellis soils and the somewhat poorly drained Burdett soils. Also included are small areas of soils that are very shallow to bedrock. Areas of included soils are as much as 3 acres and make up 20 percent of the map unit.

The seasonal high water table in the Farmington soil

is at a depth of more than 6 feet, but it is briefly near the surface in bedrock crevices during intensive rainfall. Depth to bedrock is 10 to 20 inches. It restricts rooting depth. Permeability is moderate. The available water capacity is low, and surface runoff is slow. The surface layer is strongly acid to slightly acid, but it varies in reaction with local liming practices.

The seasonal high water table in the Wassaic soil is at a depth of 2 to 3 feet. Depth to bedrock is 20 to 40 inches. It restricts rooting depth. Permeability is moderate in the surface layer and moderate or moderately slow in the subsoil. The available water capacity is low, and runoff is slow.

Most of the acreage of this unit is hayland or pasture or is idle.

The Farmington and Wassaic soils are not suited to cultivated crops. The main limitations are the shallow depth to bedrock, rock outcrops, and the seasonal high water table.

The Farmington and Wassaic soils are poorly suited to pasture. Rock outcrops in most areas restrict equipment use. Grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and increase the hazard of erosion. Restricted grazing is needed. Diverting runoff and subsurface seepage from the higher adjacent areas reduces water accumulation in some areas. Rotation grazing, proper stocking rates, yearly mowing, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of the Farmington and Wassaic soils for sugar maple is moderate. Seedling mortality is a severe limitation because the shallow depth to bedrock restricts root growth and reduces the water-holding capacity. Windthrow is a moderate limitation because of restricted root growth, except in areas where roots can penetrate crevices. Sugar maple, northern red oak, eastern white pine, and eastern hemlock are common on the soil.

The main limitation of the Farmington and Wassaic soils on sites for dwellings with basements is the shallow depth to bedrock. Included soils in this map unit and nearby soils that are deeper to bedrock are better suited to this use. The Farmington soil and especially the Wassaic soil are better suited to use as sites for dwellings without basements. Constructing dwellings without basements on graded fill material helps overcome the depth to bedrock.

The main limitation of the Farmington and Wassaic soils for local roads and streets is the depth to bedrock. Planning roads will avoid cutting grades into bedrock. Deep excavation is difficult because of the hardness of bedrock and the jointed crevices and fractures.

The main limitation of the Farmington and Wassaic soils to use as sites for septic tank absorption fields is the depth to bedrock. A site where bedrock is deeper is better suited to this use. In areas where the bedrock is creviced, contamination of ground water and nearby streams is a hazard. Areas of the Wassaic soil and included soils that are deeper to bedrock are better suited to this use than areas of the Farmington soil. Additional soil material suitable for an absorption field is needed. Other soils that are deeper to bedrock are also better suited to this use.

The Farmington and Wassaic soils are in capability subclass VIs.

Fx—Fluvaquents-Udifluvents complex, frequently flooded. This unit consists of very deep, nearly level, very poorly drained to moderately well drained loamy soils formed in recent alluvial deposits on flood plains. These soils are commonly called alluvial land. Fluvaquents are low lying and subject to frequent flooding. Udifluvents are in the slightly higher areas of the flood plain and are better drained than the Fluvaquents. Fluvaquents make up about 45 percent of this map unit; Udifluvents, about 35 percent; and other soils, about 20 percent. These soils are so intermingled that it was not possible to map them separately. They are subject to extreme change during periods of flooding. Old drainage channels cut many areas. Large areas consist of stratified gravelly deposits that in some places have a thin surface of silty alluvium. Small areas of these soils along the Hudson River consist of silt dredged or pumped from the Hudson River. The dredgings contain 2 to 4 feet of dark bluish gray silt and a few coarse fragments. Slopes range from 0 to 3 percent.

Typically, the surface layer of Fluvaquents is grayish or brownish and ranges from gravelly sandy loam to silt loam. The surface layer is 6 to 15 inches thick. The substratum is mottled brownish or grayish and ranges from very gravelly sandy loam to silt loam. The substratum is stratified from deposition.

Typically, the surface layer of Udifluvents is brownish and ranges from silt loam to fine sandy loam. The substratum is brownish and ranges from silt loam to sand. In some areas textures are gravelly throughout.

Included with these soils in mapping, in many stream valleys, are small areas of muck and marsh. Also included are areas of soils where stratified gravel layers are close to the surface and small areas of soils that are shallow to bedrock. Also included are some areas of Udifluvents that are more sloping. Areas of included soils are as much as 3 acres and make up about 20 percent of this map unit.

These soils are subject to frequent flooding and are commonly wet. Bedrock is generally at a depth of more than 5 feet. Permeability, the available water capacity,

organic matter content, and soil reaction vary with the composition of alluvium.

Most of the acreage is used as woodland or pasture or is idle.

These soils are unsuitable for use as cropland because of frequent flooding and wetness. They are also subject to gouging and deposition of gravel and cobbles on the surface, which limit use of planting and harvesting equipment.

These soils can be used for pasture, but suitability is poor. Yearly mowing, pasture rotation, and proper seeding improve pasture conditions. Some areas are poorly accessible.

The potential productivity of these soils for wood production is low. Brush and low-grade hardwoods, such as cottonwood, red maple, and poplar, will grow in many places on these soils and provide suitable habitat for wetland wildlife.

These soils are not suited to urban uses because of periodic flooding and prolonged wetness.

These soils are so variable that onsite investigations are needed to assess the potential for use as sites for dwellings and septic tank absorption fields.

These soils are in capability subclass Vw.

Gr—Granby loamy fine sand. This nearly level soil is very deep and poorly drained to very poorly drained. It is in flat and slightly depressional areas of glacial lake plains or deltas. Areas of this soil are irregular in shape and range from 3 to 50 acres. Slopes are 0 to 2 percent.

Typically, the surface layer is black loamy fine sand about 11 inches thick. The subsoil is gray, mottled fine sand to a depth of 25 inches. The substratum is dark gray, mottled sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the somewhat poorly drained Stafford soils and the moderately well drained Elnora soils in the slightly higher positions on the landscape. Also included are areas of Adrian soils, Medihemists, Hydraquents, Fluvaquents, and Udifluvents. Areas of soils that are similar to this Granby soil but that have thin layers of silt and clay are also included. Included areas are as much as 3 acres in size and make up 15 to 20 percent of this map unit.

The seasonal high water table in the Granby soil is at a depth of less than 1 foot from November to June. The soil receives runoff from adjacent areas and is ponded during some periods of the year. Bedrock is more than 60 inches deep. The water table affects the rooting depth. Permeability is rapid. The available water capacity is moderate, and surface runoff is very slow or ponded. The surface layer and subsoil are moderately acid to neutral.

Most areas of this soil have not been drained for agriculture and are woodland. Some areas are used as unimproved pasture or hayland.

This soil is not suited to cultivated crops because of the seasonal high water table and ponding of surface water. A combination of surface and subsurface drains lowers the water table. Drainage outlets are difficult to establish because of the flat or basinlike topography.

This soil is poorly suited to pasture. The seasonal high water table and ponding of water are the main limitations. Because the soil surface is soft under saturated conditions, grazing should be discontinued during wet periods. Overgrazing causes surface compaction and a noticeable loss in key pasture plants. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. The seasonal high water table causes soft ground and seriously limits the use of heavy equipment. It also causes shallow root development, which results in seedling mortality and windthrow hazard. Red maple, white ash, and quaking aspen are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and ponding. The included soils that are higher on the landscape and better drained, such as Elnora and Stafford soils, are better suited to this use.

The main limitations of this soil for local roads and streets are the seasonal high water table and ponding. Installing drainage will lower the water table near road sites. Constructing roads on raised fill material will also reduce wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, ponding, and a poor filtering capacity. Other nearby soils are better suited to this use.

This soil is in capability subclass Vw.

Ha—Hamlin silt loam. This nearly level soil is very deep and well drained. It is on flood plains along large streams and the Hudson River. Areas of this soil are long and narrow and range from 3 to more than 25 acres in size. Slopes range from 0 to 3 percent.

Typically, the surface layer is dark brown silt loam about 11 inches thick. The subsoil is dark grayish brown and dark brown silt loam about 28 inches thick. The substratum extends to a depth of 66 inches or more. It is dark grayish brown and grayish brown silt loam.

Included with this soil in mapping are small areas of the moderately well drained Teel soils and the somewhat poorly drained Wakeland soils in depressions. Also included are areas of the poorly drained and very poorly drained Wayland soils and areas of Fluvaquents and Udifluvents in old oxbows and

along smaller drainageways. Small areas of soils that are similar to Tioga soils and have rock fragments that range, by volume, to 35 percent are also included. Included areas are as much as 3 acres and make up 20 percent of this map unit.

The seasonal high water table in this Hamlin soil is at a depth of 3 to 6 feet from November to May. Depth to bedrock is more than 60 inches. Permeability is moderate. Available water capacity is high, and surface runoff is slow. The soil is subject to occasional flooding for brief periods from November to May. The surface layer is strongly acid to neutral, but it varies in reaction with local liming practices.

Most of the acreage is used for cultivated crops or is brushland.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. The naturally high fertility and high water-holding capacity make these soils highly productive. Flooding is a hazard in spring, but floodwater recedes from the surface within 2 to 7 days. In most years, flooding is not a hazard during the growing season. Cover crops, returning crop residue to the soil, and including sod crops in the cropping system help maintain soil tilth.

This soil is well suited to pasture. Restricted grazing during wet periods, rotation grazing, and proper stocking rates help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Northern red oak and sugar maple are common on this soil.

The main limitation of this soil on sites for dwellings with basements is occasional flooding. Other nearby soils that are not subject to flooding are better suited to this use.

The main limitation of this soil for local roads and streets is flooding. Constructing roads on raised fill material composed of coarse textured subgrade above the flood level is needed to prevent flood damage.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are flooding and the seasonal high water table. Other nearby soils that are not subject to flooding are better suited to this use.

This soil is in capability class I.

HnA—Hornell silt loam, 0 to 3 percent slopes. This nearly level soil is moderately deep and somewhat poorly drained. It is on bedrock-controlled hills and plains. Areas of this soil are elliptical or irregularly shaped and range from 3 to 30 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsoil is yellowish brown, mottled silty clay to a depth of about 17 inches. The substratum is dark grayish brown, mottled very channery silty clay about 11 inches thick. Soft shale bedrock is at a depth of 28 inches.

Included with this soil in mapping are small areas of the poorly drained Allis soils in slight depressions and along drainageways. Also included, on knolls or rises, are areas of better drained soils that have fewer mottles in the subsoil than the Hornell soil. Also included are small areas where bedrock is less than 20 inches below the surface. Included areas are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Hornell soil is perched above the clayey subsoil at a depth of 6 to 18 inches from May to December. Depth to bedrock is 20 to 40 inches. It restricts rooting depth. Permeability is moderate in the surface layer and slow or very slow in the subsoil. The available water capacity is moderate.

Most of the acreage is used as brushland or hayland.

This soil is moderately suited to cultivated crops because of the seasonal high water table. The water table delays planting and limits the choice of crops that can be grown. Diversions to intercept runoff from adjacent slopes, grassed waterways, and tile drainage help remove excess water. The depth to bedrock and the nearly level slope limit installation and design of tile drainage systems. Returning crop residue to the soil, a conservation tillage system, and tillage at proper moisture levels help maintain soil tilth and increase infiltration.

This soil is moderately well suited to pasture. Because of the seasonal high water table, overgrazing causes surface compaction. Cover crops, weed control, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The clayey subsoil makes the surface soft under heavy loads in spring and causes a moderate equipment limitation. Seedling mortality is a moderate limitation. Sugar maple, white ash, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Diversions placed above the building site, foundation drains, and a protective coating on basement walls help prevent wet basements.

The main limitations of this soil for local roads and streets are the seasonal high water table and low strength. Constructing roads on raised fill material and installing drainage reduce wetness. Coarse textured subgrade or base material improves soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the depth to bedrock, and the slow percolation. A specially designed septic tank absorption field, including drainage around the site, will properly

filter the effluent. Other soils in the nearby higher landscape positions or the deeper, well drained included soils are better suited to this use.

This soil is in capability subclass IIIw.

HnB—Hornell silt loam, 3 to 8 percent slopes. This gently sloping soil is moderately deep and somewhat poorly drained. It is on bedrock-controlled hills and plains. Areas of this soil are elliptical or irregularly shaped and range from 3 to 30 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsoil is yellowish brown, mottled silty clay about 10 inches thick. The substratum is dark grayish brown, mottled very channery silty clay about 11 inches thick. Soft shale bedrock is at a depth of 28 inches.

Included with this soil in mapping, in depressions and drainageways, are small areas of the poorly drained Allis soils. Also included are areas of Tuller and Greene soils where there is less clay. Also included are areas where bedrock is less than 20 inches below the surface. Also included, in the higher landscape positions, are areas of better drained soils. Included areas are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Hornell soil is perched above the clayey subsoil at a depth of 6 to 18 inches from December to May. Depth to bedrock is 20 to 40 inches. It restricts rooting depth. Permeability is moderate in the surface layer and slow or very slow in the subsoil. The available water capacity is moderate.

Most of the acreage is used as hayland, pasture, or brushland.

This soil is moderately suited to cultivated crops because of the seasonal water table. Erosion is a hazard on some areas that have long slopes. The seasonal high water table delays planting and limits the choice of crops that can be grown. Diversions to intercept runoff from adjacent slopes, grassed waterways, and tile drainage help remove excess water. Depth to bedrock limits installation of tile drainage systems. Returning crop residue to the soil, a conservation tillage system, and tillage at proper moisture levels help maintain soil tilth and increase infiltration.

This soil is moderately well suited to pasture. Because of the seasonal high water table, overgrazing causes surface compaction. Cover crops, yearly mowing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The soil surface becomes soft under heavy loads in spring and causes a moderate equipment limitation. Seedling mortality is a moderate limitation. Sugar maple, white ash, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Diversions placed above the building site, foundation drains, and a protective coating on basement walls help prevent wet basements.

The main limitations of this soil for local roads and streets are the seasonal high water table and low strength. Constructing roads on raised fill material and installing drainage reduce wetness. Coarse textured subgrade or base material helps improve soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the depth to bedrock, and the slow percolation. A specially designed septic tank absorption field, including drainage around the site, will adequately filter effluent. Other soils in the higher nearby landscape positions or the deeper, well drained included soils are better suited to this use.

This soil is in capability subclass IIIw.

HnC—Hornell silt loam, 8 to 15 percent slopes. This strongly sloping soil is moderately deep and somewhat poorly drained. It is on bedrock-controlled hillsides. Areas of this soil are elliptical or irregularly shaped and range from 3 to 20 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsoil is yellowish brown, mottled silty clay about 10 inches thick. The substratum is dark grayish brown, mottled very channery silty clay about 11 inches thick. Soft shale bedrock is at a depth of 28 inches.

Included with this soil in mapping are the poorly drained Allis soils in depressions and drainageways. Also included, where bedrock is shallow, are small areas of the somewhat excessively drained Nassau soils. Areas of included soils are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Hornell soil is perched above the clayey subsoil at a depth of 6 to 18 inches from December to May. Depth to bedrock is 20 to 40 inches. It restricts rooting depth. Permeability is moderate in the surface layer and slow or very slow in the subsoil. The available water capacity is moderate.

Most of the acreage is used as hayland, pasture, or brushland.

This soil is moderately suited to cultivated crops because of the seasonal high water table and the erosion hazard. Open ditches and subsurface tile drainage lower the water table, improve choice of crops, and allow earlier planting. In some areas bedrock within a depth of 40 inches limits design and installation.

Diversion ditches help intercept runoff from the higher slopes. Contour farming, a conservation tillage system, cover crops, and incorporating crop residue into the soil help control erosion, maintain fertility, and maintain soil tilth.

This soil is moderately well suited to pasture. Overgrazing and grazing when the soil is wet causes surface compaction and results in loss of key pasture plants and increases erosion. Prevention of overgrazing, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The soil surface is soft under heavy loads and causes a moderate equipment limitation. Surface compaction and erosion are hazards. Building logging roads on the contour and installing water bars help control erosion. Seedling mortality is a moderate limitation. Sugar maple, white ash, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Erosion is a hazard during construction. Diversions placed above the building site, foundation drains, and a protective coating on basement walls help prevent wet basements. Maintaining vegetative cover in areas adjacent to the construction site and mulching help control erosion during construction.

The main limitations of this soil for local roads and streets are the seasonal high water table and low strength. Constructing roads on raised fill material and installing drainage reduce wetness. Coarse textured subgrade or base material helps improve soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the depth to bedrock, and the slow percolation. A specially designed septic tank absorption field, including drainage around the site, will adequately filter effluent. Other nearby soils that are higher on the landscape are better suited to this use.

This soil is in capability subclass IIIe.

HoA—Howard gravelly silt loam, 0 to 3 percent slopes. This nearly level soil is very deep and somewhat excessively drained to well drained. It is on low plains and benches adjacent to streams. Areas of this soil are round or irregularly shaped and range from 3 to 100 acres in size.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 8 inches thick. The subsurface layer is brown very gravelly silt loam about 9 inches thick. The subsoil extends to a depth of 67 inches. It is dark yellowish brown and pale brown very gravelly loam in the upper part, dark brown very gravelly sandy clay loam in the middle part, and dark yellowish brown very gravelly sandy clay loam in the lower part. The substratum is very dark grayish brown fine and very fine gravel to a depth of 75 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained soils in slight depressions and along drainageways. Also included, in a few areas of limestone bedrock, are areas of the shallow Farmington soils and the moderately deep Wassaic soils. Included areas are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Howard soil is at a depth of more than 60 inches. Permeability is moderate or moderately rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is moderate.

Most of the acreage is used as cropland or hayland. Some areas are used as a source of gravel.

This soil is well suited to cultivated crops, although it may be droughty in summer. It is among the best suited soils in the county for food and fiber production. Irrigation systems function well on this soil. A conservation tillage system, cover crops, crop residue returned to the soil, and applications of manure help maintain soil tilth and increase soil moisture.

This soil is well suited to pasture. Midsummer droughtiness limits forage growth. Rotational grazing, proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, eastern white pine, and northern red oak are common on the soil.

This soil has no significant limitations on sites for dwellings with basements.

The main limitation of this soil for local roads and streets is a moderate frost-action potential. Providing a coarse textured subgrade or base material to frost depth helps overcome this limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is poor filtering of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent.

This soil is in capability subclass IIs.

HoB—Howard gravelly silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and somewhat excessively drained to well drained. It is on low plains and benches adjacent to streams. Areas are long and narrow or irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 8 inches thick. The subsurface layer is brown very gravelly silt loam about

9 inches thick. The subsoil extends to a depth of 67 inches. It is dark yellowish brown and pale brown very gravelly loam in the lower part, dark brown very gravelly sandy clay loam in the middle part, and dark yellowish brown very gravelly sandy clay loam in the lower part. The substratum is very dark grayish brown fine and very fine gravel to a depth of 75 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained soils in slight depressions and along drainageways. Also included, in a few areas of limestone bedrock, are areas of shallow Farmington soils and the moderately deep Wassaic soils. Included areas are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Howard soil is at a depth of more than 5 feet. Permeability is moderate or moderately rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is moderate.

Most of the acreage is used as cropland or hayland. Some areas are used as a source of gravel.

This soil is well suited to cultivated crops, although it may be droughty in summer. Erosion is a hazard. This soil ranks among the best suited soils in the county for food and fiber production. Design and management of irrigation systems are somewhat more difficult on this soil than on the nearly level Howard soil. A conservation tillage system, cover crops, crop residue returned to the soil, and applications of manure help maintain soil tilth, control erosion, and increase soil moisture.

This soil is well suited to pasture. In some years midsummer droughtiness limits forage growth. Rotation grazing, proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, eastern white pine, and northern red oak are common on the soil.

This soil has no significant limitations on sites for dwellings with basements.

The main limitation of this soil for local roads and streets is a moderate frost-action potential. Providing a coarse textured subgrade or base material to frost depth helps overcome this limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. The soil is very rapidly permeable in the substratum and is a poor filter of effluent. Consequently, ground-water contamination is a hazard.

This soil is in capability subclass IIs.

HoC—Howard gravelly silt loam, rolling. This rolling soil is very deep and somewhat excessively drained to well drained. It is on low round hills, benches near streams, and ridges. Areas of this soil are irregularly shaped or long and narrow and range from 3 to 30 acres in size. Slopes range from 8 to 15 percent.

Typically, the surface layer is very dark grayish brown gravelly silt loam about 8 inches thick. The subsurface layer is brown very gravelly silt loam about 9 inches thick. The subsoil extends to a depth of 67 inches. It is dark yellowish brown and pale brown very gravelly loam in the upper part, dark brown very gravelly sandy clay loam in the middle part, and dark yellowish brown very gravelly sandy clay loam in the lower part. The substratum is very dark grayish brown fine and very fine gravel to a depth of 75 inches or more.

Included with this soil in mapping are small areas of severely eroded soils. Small areas of Chenango soils are included where the subsoil has less clay. Included areas are as much as 3 acres and make up about 10 percent of the map unit.

The seasonal high water table in this Howard soil is at a depth of more than 5 feet. Permeability is moderate or moderately rapid in the surface layer and subsoil and very rapid in the substratum. The available water capacity is moderate.

Most of the acreage is used as cropland or hayland. Some areas are used as a source of gravel.

This soil is moderately suited to cultivated crops. In some areas it is droughty and susceptible to erosion. Irrigation systems are generally not practical on these slopes. A conservation tillage system, cover crops, crop residue returned to the soil, and applications of manure help maintain soil tilth, control erosion, and increase soil moisture.

This soil is moderately well suited to pasture. In some years midsummer droughtiness limits forage growth. Rotational grazing, proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Logging roads built across the slope and water bars reduce runoff and control erosion. Sugar maple, eastern white pine, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the slope. The slope results in higher costs of excavating, grading, and landscaping. Cutting and filling to grade and establishing benches help overcome the slope limitation. Erosion is a hazard during construction. Maintaining a vegetative cover in areas adjacent to the construction site and using diversions above the site help control erosion during construction.

This soil has limitations for local roads and streets

because of the frost-action potential and slope. Providing a coarse textured subgrade or base material to frost depth will prevent the damage that frost action causes. Adapting road design to the lay of the land helps overcome the slope limitation. Excavation and grading costs will be somewhat higher for roads on this soil than on lesser sloping soils.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. The substratum is very rapidly permeable and is a poor filter of effluent. Consequently, contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent.

This soil is in capability subclass IIIe.

HuB—Hudson silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on plains and slightly convex hills. Areas of this soil are irregularly shaped and range from 3 to 40 acres in size.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface layer is brown, mottled silt loam about 3 inches thick. The subsoil extends to a depth of 31 inches. The upper part is brown silty clay loam. The lower part is brown silty clay. The substratum is brown varved silt and clay to a depth of 60 inches or more.

Included with this soil in mapping, on the base of slopes, are small areas of the somewhat poorly drained Rhinebeck soils. Also included are the poorly drained and very poorly drained Madalin soils in drainageways and depressions. Small areas of soils that have less clay in the subsoil than the Hudson soil are also included. Also included are small areas of Claverack soils where thin sand deposits overlie clay. Included areas are as much as 3 acres and make up about 10 percent of this unit.

The seasonal high water table in this Hudson soil is perched above the clayey subsoil at a depth of 1½ to 2 feet between November and April. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately slow in the surface and subsurface layers and slow or very slow below. The available water capacity is high.

Most of the acreage is used as pasture or cropland.

This soil is well suited to cultivated crops. Erosion is a hazard. The seasonal high water table is also a limitation. Random subsurface drains placed in depressions will lower the water table in spring to allow for earlier planting, especially near included soils. A conservation tillage system in combination with contour farming or stripcropping helps control erosion.

This soil is well suited to pasture. Erosion is a serious hazard if the pasture is overgrazed. Grazing when the surface is wet can cause surface compaction. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Northern red oak, sugar maple, eastern white pine, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Landscaping around the building and using diversion ditches above it will remove excess surface water. Foundation drains and protective coatings on basement walls help prevent wet basements.

The main limitations of this soil for local roads and streets are the frost-action potential and low strength. Providing a coarse textured subgrade or base material to frost depth and adequate drainage in areas of the wetter included soils reduce frost action and improve soil strength.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. A drainage system around the filter field and interceptor drains to divert water from the higher areas will lower the water table. Enlarging the trench below the distribution lines will improve the percolation of effluent.

This soil is in capability subclass IIe.

HuC—Hudson silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and moderately well drained. It is on knolls and hillsides. Areas of this soil are oblong or irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface layer is brown, mottled silt loam about 3 inches thick. The subsoil extends to a depth of about 31 inches. The upper part is brown silty clay loam. The lower part is brown silty clay. The substratum extends to a depth of 60 inches or more. It is brown, varved silt and clay.

Included with this soil in mapping are small areas of the poorly drained and very poorly drained Madalin soils and the somewhat poorly drained Rhinebeck soils in drainageways. Also included are small areas of soils that have less clay in the subsoil than the Hudson soil. In some areas, the surface layer is thinner than is typical because of erosion. Included areas are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Hudson soil is perched above the clayey subsoil at a depth of 1½ to 2 feet between November and April. Depth to bedrock is

more than 60 inches. Permeability is moderate or moderately slow in the surface and subsurface layers and slow or very slow below. The available water capacity is high.

Most of the acreage is used as pasture, woodland, or cropland.

This soil is moderately suited to cultivated crops. Erosion is a severe hazard, especially on long slopes. The seasonal high water table is a limitation. Random subsurface drains placed in depressions lower the water table. Contour farming, stripcropping, and a conservation tillage system help control erosion and maintain soil tilth.

This soil is moderately well suited to pasture. Erosion is a serious hazard if the pasture is overgrazed. Grazing when the surface is wet causes surface compaction. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Erosion is a moderate hazard. Building logging roads on the contour and establishing water bars help control erosion. Wooded areas commonly support northern red oak, sugar maple, eastern white pine, and white ash.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Landscaping around the building and using diversion ditches above it help remove excess surface water. Foundation drains and protective coatings on basement walls help prevent wet basements. Erosion is a hazard during construction. Maintaining vegetative cover adjacent to the construction site and diverting runoff help control erosion during construction.

The main limitations of this soil for local roads and streets are the frost-action potential and low strength. Coarse textured subgrade or base material to frost depth and adequate drainage in areas of the wetter included soils reduce frost action and increase soil strength. Mulching and seeding of graded roadbanks help control erosion.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. A drainage system around the filter field and diversions to intercept runoff from the higher areas will lower the water table. Enlarging the trench below the distribution lines will improve the percolation of effluent.

This soil is in capability subclass IIIe.

HuD—Hudson silt loam, hilly. This hilly soil is very deep and moderately well drained. It is on hillsides and slopes bordering streams and gullies. Areas of this soil are irregularly shaped and range from 5 to 70 acres in size. Slopes range from 15 to 25 percent.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface layer is brown, mottled silt loam about 3 inches thick. The subsoil extends to a depth of 31 inches. The upper part is brown silty clay loam. The lower part is brown silty clay. The substratum is brown, varved clay and silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the somewhat poorly drained Rhinebeck soils in drainageways and seep spots. Also included are small areas of soils that have less clay in the subsoil. In some areas the surface layer is thinner than is typical because of erosion. Included areas are as much as 3 acres and make up about 15 percent of this map unit.

The seasonal high water table in this Hudson soil is perched above the clayey subsoil at a depth of 1½ to 2 feet between November and April. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately slow in the surface and subsurface layers and slow or very slow below. The available water capacity is high.

Most of the acreage is used as pasture, woodland, or brushland.

This soil is poorly suited to cultivated crops because of the slope and the severe erosion hazard. Some conservation practices reduce surface runoff, divert water from steeper slopes, and control erosion. These practices include contour tillage, stripcropping, a conservation tillage system, diversions, and crop rotations that include 1 or more years of grasses and legumes.

This soil is moderately suited to pasture because of slope and the severe erosion hazard. Grazing when this soil is wet causes surface compaction and increases erosion. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Erosion is a severe hazard in areas of logging activity. Building logging roads on the contour and installing water bars help control water erosion. The equipment limitation is moderate because of the slope. Northern red oak, sugar maple, eastern white pine, and white ash are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. Diversion ditches above the building, foundation drains, and protective coatings on basement walls help prevent wet basements. Designing buildings to conform to the natural slope and landscaping around the buildings help overcome the slope limitation. Erosion is a hazard during construction. Maintaining a vegetative cover adjacent to the construction site and

diverting runoff help control erosion during construction.

The main limitations of this soil for local roads and streets are the frost-action potential, the low strength, and the slope. Coarse textured subgrade or base material to frost depth and adequate drainage in areas of the wetter included soils will reduce frost action and increase soil strength. Building roads on the contour to the extent possible and carefully landscaping and seeding the site will avoid costly construction practices and stabilize roadbanks, respectively.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation, and the slope. A drainage system around the filter field and diversions to intercept runoff from the higher areas will lower the water table. Enlarging the trench below the distribution lines will improve the percolation of effluent. Installing distribution lines on the contour and using drop boxes or other structures to distribute the effluent evenly will enable the system to function more effectively.

This soil is in capability subclass IVe.

HuE—Hudson silt loam, 25 to 45 percent slopes. This steep soil is very deep and moderately well drained. It is on hillsides and side slopes of streambanks and large gullies. In many areas, evidence of past and present landslides or slumps is apparent along large streams. Areas of this soil are long and narrow and range from 25 to 200 acres in size.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsurface is brown, mottled silt loam about 3 inches thick. The upper part of the subsoil is brown silty clay loam, and the lower part is brown silty clay. The substratum is brown, varved clay and silt to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Colonie and Unadilla soils. These soils have more clay than the Hudson soil. Also included are Fluvaquents and Udifluvents at the base of steep slopes in drainageways. Also included are small areas of shale rock outcrops in drainageways. In some areas, slumping and sliding have disturbed this soil and the surface layer and subsoil have been altered. Included areas are as much as 3 acres and make up about 15 percent of this map unit.

The seasonal high water table in this Hudson soil is perched above the clayey subsoil at a depth of 1½ to 2 feet between November and April. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately slow in the surface and subsurface layers and slow or very slow below. The available water capacity is high. In many areas along large streams, the soil is susceptible to landslides and slumps.

Most of the acreage is used as woodland.

This soil is not suited to cultivated crops or pasture because of the slope and the severe erosion hazard. Slopes are too steep to use farm machinery. Unless vegetation protects this soil, erosion is a serious hazard.

The potential productivity of this soil for northern red oak is moderately high. The erosion hazard and the equipment limitation are severe because of the slope. Clear cutting trees on these slopes will increase runoff and erosion. Northern red oak, sugar maple, eastern white pine, and white ash are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. In many places the soil is also susceptible to landslides and slumps. The included soils in this unit and nearby soils that are less sloping are better suited to this use.

The main limitations of this soil for local roads and streets are the frost-action potential, the low strength, and the slope. Roads should be planned, where possible, to avoid this soil.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation, and the slope. Also, effluent moving into this soil from distribution lines can make the hillside more unstable and cause landslipping. Other less sloping soils are better suited to this use.

This soil is in capability subclass VIIe.

In—Ilion silt loam. This nearly level soil is very deep and poorly drained. It is in slight depressions between drumlins and on gently sloping uplands. The areas are round to long and narrow and range from 3 to 40 acres in size. Slopes range from 0 to 3 percent.

Typically, the surface layer is black silt loam about 8 inches thick. The subsurface layer is dark grayish brown silt loam about 4 inches thick. The subsoil is gray and grayish brown, mottled silty clay loam about 20 inches thick. The substratum is grayish brown gravelly silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of poorly drained and very poorly drained soils that have fewer rock fragments than the Ilion soil. Also included are small areas of Madalin soils, which have more clay than the Ilion soil. Also included, in the slightly higher positions, are the somewhat poorly drained Burdett soils. Included areas are as much as 3 acres and make up about 10 percent of this map unit.

The seasonal high water table in this Ilion soil is perched at a depth of less than 1 foot from November to May. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately slow in the surface layer and is slow or very slow in the subsoil.

Available water capacity is high. Surface runoff is very slow. The surface layer is moderately acid to neutral, and the subsoil is moderately acid to mildly alkaline.

Most of the acreage is used as woodland or brushland.

This soil is poorly suited to cultivated crops because of the seasonal high water table. The seasonal high water table delays planting, cultivating, and harvesting operations. Drainage ditches in combination with subsurface drains lower the seasonal high water table and reduce this delay. Drainage outlets are generally difficult to establish because of the basinlike topography of these areas. Cover crops and a conservation tillage system help maintain the soil tilth and organic matter content.

The soil is moderately suited to pasture. In late fall to early spring, the seasonal high water table softens and sometimes saturates the soil. Grazing when the soil is wet causes surface compaction and destroys the desirable forage. A drainage system will increase the grazing period and allow pasture maintenance. Proper stocking rates, rotation grazing, yearly mowing, and restricted grazing during wet periods keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. In most of the year the seasonal high water table softens the soil and restricts the use of heavy equipment. The seasonal high water table seriously limits the rooting depth and results in a windthrow hazard in many areas. It limits soil aeration of tree root systems and seriously affects seedling mortality. Plant competition is high. Thinning and selective harvesting practices can reduce plant competition and produce desirable yields. Red maple, eastern white pine, and hemlock are common on the soil.

The seasonal high water table or ponding is the main limitation of this soil on sites for dwellings with basements. Foundation drains, subsurface drainage systems, and protective coatings on basement walls help overcome these limitations. Grading to move surface water away from dwellings and diverting runoff from the higher areas also reduce wetness.

The main limitations of this soil for local roads and streets are the seasonal high water table, ponding, and the frost-action potential. Wetness softens this soil most of the year and causes the pavement to crack under heavy traffic. A coarse textured subgrade or base material and surface or subsurface drainage away from the road site lower the water and reduce frost action.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, ponding, and slow percolation in the subsoil. Other nearby soils are better suited to this use. A specially designed septic tank absorption field or an alternative system will properly filter effluent. A drainage system around the filter field and diversions to intercept water from the nearby higher areas will reduce wetness.

This soil is in capability subclass IVw.

KeB—Kearsarge silt loam, 0 to 8 percent slopes. This nearly level and gently sloping soil is shallow to bedrock and somewhat excessively drained. It is on glaciated summits and benches on uplands overlying bedrock. Areas of this soil are generally broad and irregular and range from 3 to more than 50 acres in size.

Typically, the surface layer is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 15 inches. It is dark yellowish brown channery silt loam. The substratum is yellowish brown channery silt loam to a depth of 18 inches. Dark gray fractured siltstone bedrock is at a depth of 18 inches.

Included with this soil in mapping are small areas of the somewhat poorly drained and poorly drained Tuller and Greene soils in depressions, along drainageways, and at the base of some slopes. Also included are a few areas of the moderately deep Lordstown soils between benches and areas of Nassau soils overlying folded shale bedrock. Also included are a few small areas of exposed bedrock and some areas of soils that have more rock fragments than the Kearsarge soil. Included areas are as much as 3 acres in size and make up about 20 percent of this map unit.

The seasonal high water table in this Kearsarge soil is at a depth of more than 6 feet. In some areas it is perched above the bedrock for very brief periods in spring. Depth to bedrock is 10 to 20 inches. It restricts rooting depth. Permeability is moderate. The available water capacity is low or very low.

This soil is moderately suited to cultivated crops because of the shallow depth to bedrock and droughtiness. In long, gently sloping areas erosion is a hazard. The rock fragments in the soil commonly cause excessive wear and repair costs of tillage equipment. Some included areas of this map unit are exposed bedrock. Excessive droughtiness in summer and bedrock limit root growth of crops. Cover crops, crop residue mixed into the soil, and a conservation tillage system help conserve moisture, increase organic matter content, and improve soil tilth.

This soil is moderately well suited to pasture because of droughtiness. In most areas some forage plants can be easily established, but regrowth after a period of grazing is generally slow except in areas of the deeper included soils. Proper stocking rates, restricted grazing during very dry periods, weed control, and rotation grazing help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is very high. Droughtiness causes a moderate rate of seedling mortality and slow growth. Bedrock limits root growth to a depth of 20 inches or less and causes a severe windthrow hazard. Northern red oak, sugar maple, eastern white pine, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings is the shallow depth to bedrock. Other included soils in this map unit and other soils on nearby landscapes, such as Lordstown soils, that are deeper to bedrock are better suited to this use. This Kearsarge soil is better suited to use as sites for dwellings without basements. Constructing dwellings without basements above bedrock and landscaping around the dwelling with additional fill help overcome the shallow depth to bedrock.

The main limitation of this soil for local roads and streets is the shallow depth to bedrock. Careful planning of road grades and locations helps avoid bedrock removal.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the shallow depth to bedrock. The deeper included soils in this map unit and nearby deep soils allow easier installation of absorption fields and will adequately filter effluent.

This soil is in capability subclass IIIs.

LaC—Lackawanna channery silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and well drained. It is on convex slopes of upland till plains. Areas of this soil are oblong and range from 10 to 35 acres in size.

Typically, the surface layer is dark brown channery silt loam about 10 inches thick. The upper part of the subsoil is thick and is dark reddish brown and reddish brown channery silt loam and channery loam about 15 inches thick. The lower part is very firm and brittle, weak red very channery silt loam about 27 inches thick. This layer is a fragipan. The substratum is weak red very channery silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of the moderately well drained Wellsboro soils on the lower parts of side slopes. Also included are areas of the somewhat poorly drained Morris soils on the lower parts of the landscape and along drainageways. Also included are small areas of the moderately deep Oquaga soils. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Lackawanna soil is perched above the fragipan at a depth of 2½ to 6 feet. Depth to the fragipan limits rooting depth, which ranges from 17 to 36 inches. Permeability is moderate above the fragipan and slow within the fragipan and below. The available water capacity is moderate, and runoff is slow to very rapid. The surface layer and subsoil are strongly acid or very strongly acid.

Most of the acreage is used as hayland, woodland, pasture, or brushland.

This soil is moderately suited to cultivated crops. The erosion hazard and the seasonal high water table are the main limitations. Tile drains will lower the water table in the wetter, included soils and allow early planting and more uniform field management. A conservation tillage system in combination with contour farming or stripcropping help control erosion. Cover crops and crop residue mixed into the soil help maintain organic matter content, improve soil tilth, and control erosion.

This soil is well suited to pasture. Preventing overgrazing and restricting grazing when the soil is wet are the main pasture management concerns. Grazing when the soil is wet will cause surface compaction. Overgrazing and surface compaction restrict plant growth, increase surface runoff, and cause excessive erosion. Rotation grazing, proper stocking rates, yearly mowing, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Constructing roads on the contour helps control gully erosion. Brush removal and planting early in spring when the soil is moist improve seedling survival. Careful planting is needed in areas of seep spots. Northern red oak, white pine, red maple, beech, and hickory are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Diversions placed upslope help remove runoff. Designing dwellings to conform to the natural slope of the land helps overcome the slope limitation.

The main limitations for local roads and streets on this soil are the slope and the frost-action potential. A coarse textured subgrade or base material and surface or subsurface drainage will reduce frost action. Constructing roads on the contour helps control erosion and overcome the slope limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is slow permeability in the fragipan. Enlarging the absorption field or the trench below the absorption field will improve percolation.

This soil is in capability subclass IIIe.

LaD—Lackawanna channery silt loam, 15 to 25 percent slopes. This moderately steep soil is very deep and well drained. It is on convex slopes of upland till

plains. Areas of this soil are oblong and range from 5 to 25 acres in size.

Typically, the surface layer is dark brown channery silt loam about 10 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown channery silt loam and channery loam about 15 inches thick. The lower part is very firm and brittle, weak red very channery silt loam about 27 inches thick. This layer is a fragipan. The substratum is weak red very channery silt loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of the moderately well drained Wellsboro soils on the lower parts of side slopes. Also included are small areas of the moderately deep Oquaga soils. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Lackawanna soil is perched above the fragipan at a depth of 2½ to 6 feet. Depth to the fragipan limits rooting depth and ranges from 17 to 36 inches. Permeability is moderate above the fragipan and slow within the fragipan and below. The available water capacity is moderate, and runoff is slow to very rapid. The surface layer and subsoil are very strongly acid or strongly acid.

Most of the acreage is used as woodland, pasture, or brushland.

This soil is poorly suited to the cultivated crops commonly grown in the area. The severe erosion hazard and the seasonal high water table are the main limitations. Tile drains will lower the water table in the wetter, included soils and allow early planting and more uniform field management. A conservation tillage system or stripcropping and contour farming in combination with crop rotations that include 1 or more years of grasses and legumes help control erosion. Cover crops and crop residue mixed into the soil help maintain the organic matter content and improve soil tilth.

This soil is moderately suited to pasture. Preventing overgrazing and restricting grazing when the soil is wet are the main pasture management concerns. Grazing when the soil is wet causes surface compaction. Overgrazing and surface compaction restrict plant growth, increase surface runoff, and cause excessive erosion. Rotation grazing, proper stocking rates, yearly mowing, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Constructing roads on the contour helps control gully erosion. Brush removal and planting early in spring when the soil is moist improve seedling survival. The equipment limitation is moderate because of the slope. Northern red oak, white pine, red maple, beech, and hickory are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Diversion ditches placed upslope help remove runoff. Cutting and filling in designing benches help overcome the slope limitation. Erosion is a hazard during construction. Maintaining a vegetative cover adjacent to the construction site and diverting runoff help control erosion.

The main limitations of this soil for local roads and streets are the slope and the frost-action potential. A coarse textured subgrade or base material and surface or subsurface drainage reduce the frost action. Constructing roads on the contour helps control erosion.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the slope and the slow permeability in the fragipan. Enlarging the absorption field or the trench below the distribution lines will improve percolation. Installing distribution lines on the contour and using drop boxes or other structures will ensure even distribution of effluent.

This soil is in capability subclass IVe.

LcE—Lackawanna channery silt loam, 15 to 35 percent slopes, very stony. This moderately steep and steep soil is very deep and well drained to moderately well drained. It is on side slopes of hills. Large stones cover 3 to 15 percent of the surface. Areas of this soil are generally long and narrow and range from 3 to 50 acres in size.

Typically, the surface layer is dark brown channery silt loam about 10 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown channery silt loam about 15 inches thick. The lower part is very firm and brittle, weak red very channery silt loam about 27 inches thick. This layer is a fragipan. The substratum is weak red very channery silt loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Wellsboro soils along drainageways. Also included are areas where stones cover less than 0.1 percent of the surface and areas of the moderately deep Oquaga soils. Included areas are as much as 3 acres and make up about 15 percent of the map unit.

The seasonal high water table in this Lackawanna soil is perched above the fragipan at a depth of 2½ to 6 feet. Depth to the fragipan limits rooting depth and ranges from 17 to 36 inches. Permeability is moderate in the upper part of the subsoil and slow in the fragipan. The available water capacity is moderate, and runoff is moderate to very rapid. The surface layer and subsoil are very strongly acid to strongly acid.

This soil is not suited to cultivated crops because of the steep slope, irregular topography, and stoniness. The large stones hinder farm machinery operations and cause excessive wear of equipment. Runoff is rapid, and the erosion hazard is severe. Some spots also have a seasonal high water table and seepage.

This soil is poorly suited to pasture. Careful management is needed to prevent excessive erosion. Preventing overgrazing and restricting grazing when the soil is wet are the main pasture management concerns. Overgrazing and surface compaction restrict plant growth and increase the hazard of erosion. Proper stocking rates, pasture rotation, and yearly mowing where possible to control brush and weeds help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The slope is a moderate limitation to use of planting and harvesting equipment. Constructing logging roads on the contour helps control gully erosion. Northern red oak, white pine, red maple, beech, and hickory are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. The less sloping areas of this soil and the included less sloping soils are better suited to this use. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements in these less sloping areas. Diversion ditches placed upslope reduce runoff. Cutting and filling in designing benches help overcome the slope limitation. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to construction sites and diverting runoff help control erosion.

The main limitations for local roads and streets on this soil are the slope and the frost-action potential. A coarse textured subgrade or base material and surface or subsurface drainage reduce the frost action. Constructing roads on the contour helps control erosion and overcome the slope limitations.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the slope and the slow permeability in the fragipan. Other less sloping soils are better suited to this use.

This soil is in capability subclass VIIs.

LoA—Lordstown channery silt loam, 0 to 3 percent slopes. This nearly level soil is moderately deep and well drained. It is on bedrock-controlled benches and plains. Areas of this soil are irregular in shape and range from 3 to 40 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 6 inches thick. The subsoil is strong brown and light olive brown channery silt loam about 24 inches thick. Interbedded sandstone and shale bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow Kearsarge and Arnot soils. The moderately deep, somewhat poorly drained and poorly drained Tuller and Greene soils are included in small depressions or drainageways. Included areas are as much as 3 acres and make up 10 to 20 percent of the map unit.

Depth to bedrock in this Lordstown soil is 20 to 40 inches. The rooting depth is mainly 20 to 30 inches. Permeability is moderate. The available water capacity is moderate. Runoff is slow.

Most of the acreage is used as hayland. Some areas are used as woodland or pasture.

This soil is well suited to many cultivated crops grown in the area. It ranges among the best suited soils in the county for food and fiber production. Droughtiness is a problem in some areas, particularly on the shallow included soils. Irrigation systems function well on this soil. Cover crops, returning crop residue to the soil, and a conservation tillage system improve organic matter content, increase soil moisture, and improve soil tilth.

This soil is well suited to pasture. It may become droughty in dry weather, especially in areas of the shallow included soils. Proper stocking rates, rotation grazing, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Planting trees early in the season helps seedlings survive droughts that sometimes occur in summer. Northern red oak, sugar maple, white ash, beech, and hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. Placing the basement floor on bedrock and adding fill to the landscape around the dwelling help overcome this limitation.

The main limitations of this soil for local roads and streets are the depth to bedrock and a moderate frost-action potential. Carefully planning roads will avoid cutting grades into bedrock. Providing coarse textured subgrade or base material to frost depth helps reduce frost action.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the moderate depth to bedrock. Installing septic tank absorption fields on included soils that are deeper to bedrock will ensure proper filtering of effluent and reduce seepage into crevices within the bedrock. The nearby, very deep Nunda soils are better suited to this use.

This soil is in capability subclass IIs.

LoB—Lordstown channery silt loam, 3 to 8 percent slopes. This gently sloping soil is moderately deep and well drained. It is on bedrock-controlled benches and hilltops. Areas of this soil are long and narrow or irregularly shaped and range from 3 to 25 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 6 inches thick. The subsoil is strong brown and light olive brown channery silt loam about 24 inches thick. Interbedded sandstone and shale bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow Kearsarge and Arnot soils. The moderately deep, somewhat poorly drained and poorly drained Tuller and Greene soils are included in small depressions or drainageways. Areas of included soils are as much as 3 acres and make up 10 to 15 percent of this map unit.

Depth to bedrock in this Lordstown soil is 20 to 40 inches. The rooting depth is mainly 20 to 30 inches. Permeability is moderate. The available water capacity is moderate. Runoff is medium.

Most of the acreage is used as hayland, pasture, or woodland.

This soil is well suited to many cultivated crops grown in the area. It ranks among the best suited soils in the county for food and fiber production. Erosion is a hazard if cultivated crops are grown. The soil is somewhat droughty, especially in areas of the shallow included soils. Irrigation systems are somewhat more difficult to design and maintain on this gently sloping Lordstown soil than on the more poorly drained level areas of Lordstown soils. A conservation tillage system in combination with contour farming or stripcropping help control erosion. Cover crops and returning crop residue to the soil improve soil tilth and moisture.

This soil is well suited to pasture. It sometimes becomes droughty in dry weather, especially in areas of the shallow included soils. Rotation grazing, proper stocking rates, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The available water capacity is moderate; consequently, planting trees early in the season helps seedling survival. Northern red oak, sugar maple, white ash, beech, and hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. Placing the basement floor on bedrock and adding fill to landscape around it help overcome this limitation.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock and a moderate frost-action potential. Carefully planning roads will avoid cutting grades into bedrock. Providing coarse textured subgrade or base material to frost depth helps reduce frost action.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. Installing septic tank absorption fields on included soils that are deeper to bedrock will ensure proper filtering of effluent and reduce seepage into crevices within the bedrock. The nearby very deep Nunda soils are better suited to this use.

This soil is in capability subclass IIe.

LoC—Lordstown channery silt loam, 8 to 15 percent slopes. This strongly sloping soil is moderately deep and well drained. It is on bedrock-controlled hillsides and ridges. Areas of this soil are long and narrow or irregularly shaped and range from 3 to 100 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 6 inches thick. The subsoil is strong brown and light olive brown channery silt loam about 24 inches thick. Interbedded sandstone and shale bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow Arnot soils. The moderately deep, somewhat poorly drained and poorly drained Tuller and Greene soils are also included in drainageways, along the base of slopes, and in slight depressions. Small areas of the moderately well drained Nunda soils are included where bedrock is deeper. Also, in small areas the surface layer of the Lordstown soil is thinner than typical because of erosion. Included areas are as much as 3 acres and make up 10 to 20 percent of this map unit.

Depth to bedrock in this Lordstown soil is 20 to 40 inches. The rooting depth is mainly 20 to 30 inches. Permeability is moderate. The available water capacity is moderate. Runoff is medium.

Most of the acreage is used as woodland. Some areas are used for pasture or hay.

This soil is moderately suited to cultivated crops. Erosion is a severe hazard on long slopes. Droughtiness can also be a problem in some areas of this soil, especially in areas of the shallow included soils. Contour farming, stripcropping, a conservation tillage system, and crop rotations that include 1 or more years of grasses and legumes help control erosion. Returning crop residue to the soil and regularly adding organic material to the soil increase available soil moisture.

This soil is moderately well suited to pasture. It sometimes becomes droughty in dry weather. Overgrazing, especially during periods of drought, will destroy forage and increase the erosion hazard. Proper stocking rates, rotation grazing, and restricted grazing

during dry periods help maintain the desirable pasture plants.

The potential productivity of this soil for northern red oak is moderately high. The available water capacity is moderate; consequently, planting trees early in the season helps seedling survival. Northern red oak, sugar maple, white ash, beech, and hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. Placing the basement floor on bedrock and adding fill to landscape around it help overcome this limitation. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the construction site and diverting runoff help control erosion.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock and a moderate frost-action potential. Carefully planning roads and constructing them on the contour will avoid cutting grades into bedrock. Providing coarse textured subgrade or base material to frost depth helps reduce frost action.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. Installing septic tank absorption fields on included soils that are deeper to bedrock will ensure proper filtering of effluent and reduce seepage into crevices and fractures in the bedrock. The nearby, very deep Nunda soils are better suited to this use.

This soil is in capability subclass IIIe.

LoD—Lordstown channery silt loam, 15 to 25 percent slopes. This moderately steep soil is moderately deep and well drained. It is on bedrock-controlled hillsides. Areas of this soil are long and narrow and range from 3 to 50 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 6 inches thick. The subsoil is strong brown and light olive brown channery silt loam about 24 inches thick. Interbedded sandstone and shale bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow Arnot soils. Also included are the somewhat poorly drained and poorly drained Tuller and Greene soils along drainageways and near seeps. Also included, near the base of slopes, are the deeper Nunda soils. In some areas the surface layer of the Lordstown soil is thinner than is typical because of erosion. Included areas are as much as 3 acres and make up 10 to 15 percent of this map unit.

Depth to bedrock in this Lordstown soil is 20 to 40 inches. The rooting depth is mainly 20 to 30 inches. Permeability is moderate. The available water capacity is moderate. Runoff is rapid.

Most of the acreage is used as woodland or pasture.

This soil is poorly suited to cultivated crops because of the slope and the severe erosion hazard. A conservation tillage system, crop rotations that include several years of grasses and legumes, and stripcropping help control erosion. Returning crop residue and regularly adding organic material to the soil increase available soil moisture.

This soil is moderately suited to pasture. Conservation measures are needed to reduce runoff and control erosion. In some years droughtiness reduces forage production. Proper stocking rates, rotation grazing, weed control, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Slope moderately limits equipment use. Building logging roads on the contour helps control erosion. Planting trees early in the season when the soil is moist will improve seedling survival. Northern red oak, sugar maple, white ash, beech, and hemlock are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the depth to bedrock and the slope. Cutting and filling in designing benches and placing the basement floor on bedrock and grading around it help overcome both limitations. During construction, maintaining the vegetative cover adjacent to the construction site and diverting runoff help control erosion.

The main limitation of this soil for local roads and streets is the slope. The depth to bedrock and the frost-action potential are moderate limitations. Carefully planning roads on the contour will avoid cutting grades into bedrock.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the depth to bedrock and the slope. Installing septic tank absorption fields on included soils that are deeper to bedrock will ensure proper filtering of effluent and reduce seepage into crevices and fractures in the bedrock. Placing distribution lines on the contour with drop boxes or other structures will ensure even distribution of the effluent. Deeper, less sloping soils are better suited to this use.

This soil is in capability subclass IVe.

LrE—Lordstown-Arnot complex, 25 to 45 percent slopes, very rocky. This unit is on steep, bedrock-controlled hillsides. It consists of 45 percent moderately deep, well drained Lordstown soil; 25 percent shallow, somewhat excessively drained to moderately well drained Arnot soil; 25 percent other soils; and 5 percent areas of rock outcrop, mainly on the top of slopes. The

soils in the complex are so intermingled that mapping them separately was not practical. Areas of this soil are long and narrow and range from 3 to 100 acres in size.

Typically, the surface layer of the Lordstown soil is very dark grayish brown channery silt loam about 6 inches thick. The subsoil is strong brown and light olive brown channery silt loam about 24 inches thick. Interbedded sandstone and shale bedrock is at a depth of 30 inches.

Typically, the surface layer of the Arnot soil is dark grayish brown very channery silt loam about 8 inches thick. The subsoil is brown and strong brown very channery silt loam about 10 inches thick. Dark gray fractured siltstone bedrock is at a depth of 18 inches.

Included with this unit in mapping are the very deep Valois and Nunda soils near the base of the slopes. Areas of soils on steep alluvial fans are also included where ravines have cut through this unit and deposited fine shale fragments at the base of the slope. Included areas are as much as 3 acres and make up 25 percent of this map unit.

The seasonal high water table in the Lordstown soil is below a depth of 6 feet. In some areas it is perched above bedrock in early spring. Depth to bedrock is 20 to 40 inches. In the Arnot soil it is 10 to 20 inches. It restricts rooting depth, which is mainly in the upper 20 inches. Permeability is moderate. The available water capacity is moderate. Runoff is very rapid.

Most of the acreage is used as woodland.

The Lordstown and Arnot soils are not suitable to cultivated crops because of the slope, the severe erosion hazard, and the stones in the soil. Maintaining a permanent vegetative cover in this area helps control erosion.

The Lordstown and Arnot soils are poorly suited to pasture. Because of the slope, erosion is a severe hazard. Overgrazing will destroy pasture plants, which help hold the soil in place. Restricted grazing helps keep the pasture in good condition.

The potential productivity for northern red oak is moderately high on the Lordstown soil and moderate on the Arnot soil. Equipment limitation is severe because of the slope. The restricted rooting depth in the Arnot soil causes a severe windthrow hazard and a high rate of seedling mortality. Building logging roads on the contour and installing water bars help control erosion. Northern red oak, sugar maple, white ash, eastern white pine, and black cherry are common on the soil.

The main limitations of the Lordstown and Arnot soils on sites for dwellings with basements are the depth to bedrock and the slope. Nearby soils that are less sloping and deeper to bedrock are better suited to this use. The less sloping areas of the Lordstown and Arnot soils are better suited to use as sites for dwellings without basements.

The main limitations of the Lordstown and Arnot soils for local roads and streets are the slope and the depth to bedrock. Careful planning can avoid the use of these soils as sites for roads. On these soils, carefully planning grades and layout of roads will avoid the need for rock removal. The roads should be built on the contour where possible.

The main limitations of the Lordstown and Arnot soils to use as sites for septic tank absorption fields are the slope and the depth to bedrock. Seepage of effluent across hillsides and into crevices and fractures in the bedrock is a hazard. Nearby soils that are less sloping and deeper to bedrock are better suited to this use.

The Lordstown and Arnot soils are in capability subclass VIIe.

Ma—Madalin silt loam. This nearly level soil is very deep and poorly and very poorly drained. It is in depressions on plains and near hillsides. Areas of this soil are long and narrow or irregularly shaped and range from 5 to 80 acres in size. Slopes range from 0 to 3 percent.

Typically, a layer of black, relatively undecomposed leaves and twigs about 3 inches thick overlies the mineral surface layer. The surface layer is black and very dark gray, mottled silt loam about 9 inches thick. The subsoil is about 21 inches thick. The upper part is gray, mottled silty clay loam, the middle part is gray silty clay loam, and the lower part is dark gray silty clay. The substratum extends to a depth of 60 inches or more. It is gray, mottled silty clay loam and very dark gray silty clay.

Included with this soil in mapping are small areas of the somewhat poorly drained Rhinebeck soils in the slightly higher areas. Also included are the poorly drained Ilion soils along edges of the Madalin soil, adjacent to hillsides. Small areas of Cosad and Shaker soils are included in areas of thin sand deposits. Included areas are as much as 3 acres and make up about 15 to 25 percent of this map unit.

The seasonal high water table in this Madalin soil is at a depth of less than ½ foot between November and June. Depth to bedrock is more than 60 inches. Permeability is moderately slow in the surface layer, slow in the subsoil, and very slow in the substratum. The available water capacity is high.

Most of the soil is brushland or hayland.

This soil is poorly suited to cultivated crops. The seasonal high water table is a limitation. Closely spaced subsurface drains in combination with open ditch drainage lower the water table. Drainage outlets are

generally difficult to establish because of the basinlike topography of this soil. A conservation tillage system, cover crops, and tillage at the proper moisture content help maintain soil tilth and organic matter content.

This soil is moderately suited to pasture. Grazing when the soil is wet causes surface compaction and destroys the desirable pasture plants. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. The seasonal high water table causes the surface to be soft under heavy loads, such as tree harvesting equipment. It also limits soil aeration and root development, which causes a serious windthrow hazard and a high rate of seedling mortality. Red maple and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Diversions placed above the building site, foundation drains, and a protective coating on basement walls help prevent wet basements. The included areas of Rhinebeck soils and nearby better drained soils, such as Hudson soils, are better suited to this use. The Madalin soil has fewer limitations for dwellings without basements.

The main limitations of this soil for local roads and streets are the seasonal high water table, the low strength, and the frost-action potential. Constructing roads on raised fill material and installing drainage systems will increase soil strength. Providing grained subgrade or base material to frost depth will reduce frost action.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Adjacent soils that are higher on the landscape are better suited to this use. Septic systems on the higher areas of this Madalin soil and on areas of better drained included soils will adequately filter effluent. A drainage system around the absorption field and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trench below the distribution lines will improve percolation.

This soil is in capability subclass IVw.

MbB—Manlius channery silt loam, 3 to 8 percent slopes. This gently sloping soil is moderately deep and well drained to somewhat excessively drained. It is in smooth areas on the tops of convex, bedrock-controlled hills. Areas of this soil are oblong or irregularly shaped and range from 3 to 25 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 8 inches thick. The subsoil is 12 inches thick. It is brown channery silt loam and brown very channery silt loam. The substratum is dark grayish brown very channery silt loam. Highly weathered, thinly bedded shale bedrock is at a depth of 24 inches.

Included with this soil in mapping, in areas that have more clay, are small areas of the somewhat poorly drained Hornell and Angola soils. Also included are some areas that have fewer shale or rock fragments in the surface layer and subsoil than the Manlius soil. Also included are some areas of soils that are deep to bedrock. Included areas are as much as 3 acres and make up 10 percent of this map unit.

Depth to bedrock in this Manlius soil is 20 to 40 inches. It limits rooting depth mainly to 20 to 24 inches. Permeability is moderate. Available water capacity is low.

Most of the acreage is used as hayland or brushland.

This soil is well suited to cultivated crops. In some years it is droughty, especially where depth to bedrock is less than 24 inches. Erosion is a hazard in cultivated areas that have long slopes. A conservation tillage system in combination with contour farming or stripcropping help control erosion. Cover crops, crop rotations, returning crop residue to the soil, and regularly adding organic material improve soil tilth and increase soil moisture.

This soil is also well suited to pasture. In some years droughtiness will limit forage production. Overgrazing, especially during periods of drought, will destroy the desirable pasture grasses, increase runoff, and cause excessive erosion. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Planting seedlings early in spring will take advantage of moist soil conditions. Northern red oak, beech, hemlock, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. The areas of included soils and nearby soils that are deeper to bedrock are better suited to this use. On this Manlius soil, placing the building on the bedrock and adding fill to landscape around it or ripping the weathered shale are suitable management practices.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock and a moderate frost-action potential. Carefully planning roads will avoid cutting grades into bedrock. However, the bedrock is generally highly weathered and easy to rip with typical construction equipment. Providing coarse textured subgrade or base material to frost depth will reduce the frost action.

The main limitation affecting the use of this soil as a

site for septic tank absorption fields is the depth to bedrock. Adding soil material suitable for an absorption field is needed. Septic tank absorption fields in areas of the included soils that are deeper to bedrock will properly filter effluent.

This soil is in capability subclass IIe.

MbC—Manlius channery silt loam, 8 to 15 percent slopes. This strongly sloping soil is moderately deep and well drained to somewhat excessively drained. It is on convex, bedrock-controlled hillsides. Areas of this soil are roughly long and narrow and range from 3 to 25 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 8 inches thick. The subsoil is 12 inches thick. It is brown channery silt loam and brown very channery silt loam. The substratum is dark grayish brown very channery silt loam. Highly weathered, thinly bedded shale bedrock is at a depth of 24 inches.

Included with this soil in mapping, near steep slopes, are small areas of the somewhat poorly drained Angola soils. Also included, where harder sandstone or siltstone is interbedded in the shale, are areas of rock outcrop and small areas of Lordstown soils. Also included are some areas of soils that are deep to bedrock. Included areas are as much as 3 acres and make up 15 percent of the map unit.

Depth to bedrock in this Manlius soil is 20 to 40 inches. It limits rooting depth to 15 to 24 inches. Permeability is moderate. Available water capacity is low.

Most of the acreage is used as hayland or brushland.

This soil is moderately suited to cultivated crops. In some years it is droughty, especially where depth to bedrock is less than 24 inches. Erosion is a hazard, especially on long slopes. A conservation tillage system and contour farming or stripcropping in combination with crop rotations that include 1 or more years of grasses and legumes help control erosion. Cover crops, returning crop residue to the soil, and regularly adding organic material improve soil tilth and increase soil moisture.

This soil is moderately well suited to pasture. In some years droughtiness limits forage production. Overgrazing will destroy the desirable pasture grasses, increase runoff, and cause excessive erosion. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Planting seedlings early in spring will take advantage of moist soil conditions. Northern red oak, beech, hemlock, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. Areas of the included soils and nearby soils that are deeper to bedrock are better suited to this use. On this Manlius soil, placing the building on the bedrock and adding fill to landscape around it or ripping the highly weathered bedrock is a suitable management practice. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site and diverting runoff help control erosion.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock, the slope, and a moderate frost-action potential. Carefully planning and constructing them on the contour will avoid cutting grades into bedrock. The bedrock is generally highly weathered and easy to rip with typical construction equipment. Providing coarse textured subgrade or base material to frost depth helps reduce frost action.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. Septic tank absorption fields in areas of included soils that are deeper to bedrock will properly filter effluent.

This soil is in capability subclass IIIe.

MbD—Manlius channery silt loam, 15 to 25 percent slopes. This moderately steep soil is moderately deep and well drained to somewhat excessively drained. It is on the side slopes of bedrock-controlled hills. Areas of this soil are long and narrow and range from 3 to 80 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 8 inches thick. The subsoil is about 12 inches thick. It is brown channery silt loam and brown very channery silt loam about 4 inches thick. Highly weathered, thinly bedded shale bedrock is at a depth of 24 inches.

Included with this soil in mapping are small areas of soils that are deep to bedrock. Also included, where strata of harder sandstone or siltstone are interbedded in the shale, are areas of rock outcrop and small areas of Lordstown soils. Areas of included soils are as much as 3 acres and make up 10 percent of the map unit.

Depth to bedrock in this Manlius soil is 20 to 40 inches. It limits rooting depth to 15 to 24 inches. Permeability is moderate. Available water capacity is low.

Most of the acreage is used as hayland or brushland.

This soil is poorly suited to cultivated crops. The slope, droughtiness, and the severe erosion hazard are the main limitations. A conservation tillage system that leaves residue on the surface after planting and crop rotations that include several years of grasses and legumes in combination with terracing or stripcropping

help control erosion. Cover crops and returning crop residue and regularly adding organic material to the soil increase soil moisture.

This soil is moderately well suited to pasture. Conservation measures are needed to reduce runoff and control erosion. In some years droughtiness limits forage production. Overgrazing, especially during periods of drought, will destroy the desirable pasture grasses and cause excessive erosion. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The slope is a moderate limitation to use of equipment. Planting seedlings early in spring will take advantage of moist soil conditions. Northern red oak, beech, hemlock, and sugar maple are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the depth to bedrock and the slope. Areas of included soils and nearby soils that are less sloping and deeper to bedrock are better suited to this use. On this Manlius soil, placing the building on bedrock and adding fill to landscape around it or ripping the weathered bedrock are suitable management practices. Designing the dwelling to conform to the slope or cutting and filling in constructing benches are also suitable management practices. Maintaining the vegetative cover adjacent to the site, diverting runoff, and mulching help control erosion.

The main limitation of this soil for local roads and streets is the slope. Depth to bedrock is also a limitation. Laying out roads on the contour is a suitable management practice. Landscaping and grading help overcome the slope limitation. If necessary, the highly weathered bedrock can be easily ripped with typical construction equipment.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the depth to bedrock and the slope. Septic tank absorption fields on the included soils that are deeper to bedrock will properly filter effluent. Installing distribution lines on the contour, with drop boxes or other structures, will ensure even distribution of effluent and more effective operation of the system.

This soil is in capability subclass IVe.

MbE—Manlius channery silt loam, 25 to 35 percent slopes. This steep soil is moderately deep and well drained to somewhat excessively drained. It is on the side slopes of bedrock-controlled hills. Areas of this soil are long and narrow and range from 20 to 60 acres in size.

Typically, the surface layer is very dark grayish brown channery silt loam about 8 inches thick. The subsoil is about 12 inches thick. It is brown channery silt loam and brown very channery silt loam. The substratum is dark grayish brown very channery silt loam about 4 inches thick. Highly weathered, thinly bedded shale is at a depth of 24 inches.

Included with this soil in mapping, at the bottom of slopes, are small areas of soils that are deep to bedrock. Also included, where harder sandstone or siltstone bedrock is interbedded in the shale, are areas of rock outcrop and small areas of Lordstown soils. Included areas are as much as 3 acres and make up 15 percent of the map unit.

Depth to bedrock in this Manlius soil is 20 to 40 inches. It limits rooting depth to 15 to 24 inches. Permeability is moderate. Available water capacity is low.

Most of the acreage is used as woodland. Some areas are used for unimproved pasture.

This soil is not suited to cultivated crops because of the slope. Erosion is a serious hazard if the surface is disturbed. Operation of farm equipment is generally unsafe on these slopes.

This soil is poorly suited to pasture. Erosion is a hazard. Preventing overgrazing limits damage to key pasture species and helps control erosion. Proper stocking rates and rotational grazing help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The slope is a moderate limitation for planting and harvesting equipment. Building roads on the contour and installing water bars will prevent gully formation and reduce erosion. Sugar maple, northern red oak, beech, and hemlock are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the depth to bedrock and the slope. Areas of included soils in this unit and nearby areas that are less steep and deeper to bedrock are better suited to this use.

The main limitation of this soil for local roads and streets is the slope. Laying out roads on the contour helps overcome the slope limitation. Landscaping and grading also help overcome the slope limitation.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the depth to bedrock and the slope. Other soils that are deeper and less sloping are better suited to this use.

This soil is in capability subclass VIe.

Mh—Medihemists and Hydraquents, ponded. This map unit consists of very poorly drained organic soils or very poorly drained mineral soils. Many areas contain both soils. The areas are shallow ponds bordering lakes, ponds, and other open bodies of water. The level

of water covering these soils fluctuates with the water level of the adjacent bodies of open water. Most areas are in natural depressions, but some areas are in depressions that people or beavers have created. Cattails, rushes, grasses, and other water-tolerant herbaceous plants are the dominant vegetation. Trees are growing only where the water is very shallow. In many areas these soils are separate, but they are so similar in land use potential and character that they were mapped together. The total acreage of this unit is about 45 percent Medihemists, 35 percent Hydraquents, and 20 percent soils of minor extent.

Typically, Medihemists consist of layers of black, well decomposed organic material ranging from 16 to more than 60 inches in thickness. The underlying mineral soil ranges from silty clay loam to gravelly loamy sand.

Typically, Hydraquents are mottled with bluish or grayish colors. They range from silty clay loam to loamy sand to a depth of 60 inches or more.

Included with these soils in mapping are areas of wet soils on which moving floodwater has an influence. Also included are small areas of soils on islands that are better drained and higher on the landscape than the Medihemists and Hydraquents. Also included, in the Pine Bush, are small areas of the poorly drained Granby soils and the somewhat poorly drained Stafford soils. Included areas are as much as 3 acres and make up about 20 percent of this map unit.

Permeability of Medihemists and Hydraquents ranges from moderately slow to moderately rapid. Medihemists range from strongly acid to moderately alkaline, and Hydraquents range from strongly acid to neutral.

These soils are mainly idle and provide habitat for wetland wildlife. Onsite investigation is needed to determine the feasibility for all other uses. In most places the marshes are difficult to drain because adjacent open water controls the water level. Constructing islands and nesting boxes and seeding will improve wildlife habitat.

These soils are in capability subclass VIIIw.

Mk—Middlebury silt loam. This nearly level soil is very deep and somewhat poorly drained. It is on flood plains along major streams. Areas of this soil are long and narrow and range from 3 to 25 acres in size. Slopes range from 0 to 3 percent.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 33 inches thick. The upper part is brown and very dark grayish brown silt loam. The lower part is mottled, brown silt loam and dark grayish brown gravelly loam. The substratum is dark gray and grayish brown very gravelly sand to a depth of 70 inches or more.

Included with this soil in mapping are small areas of the well drained Tioga soils and the poorly drained and very poorly drained Wayland soils. Also included, in spots that are not usually subject to flooding, are areas of the somewhat poorly drained Raynham and Rhinebeck soils. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Middlebury soil is at a depth of ½ foot to 2 feet from February to April. The soil is subject to occasional flooding for brief periods from November to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil and rapid or moderately rapid in the substratum. The available water capacity is high, and surface runoff is slow.

Most areas of this soil have been drained and are used for corn or hay. Some areas are used for pasture.

This soil is well suited to cultivated crops. Where drained, it ranks among the soils best suited in the county for food and fiber production. Flooding and the seasonal high water table are the main limitations. Flooding occurs mainly in winter and early spring. In some years it delays planting, but damaging floods do not normally occur during the growing season. In most areas drainage is needed for best crop production, but outlets are generally difficult to establish. Field ditches and shallow surface ditches or tile lines will improve drainage. Streambank protection and channel improvement are needed in some areas. Cover crops and a conservation tillage system help maintain or improve soil tilth.

This soil is well suited to pasture. Restricted grazing when the soil is wet helps prevent surface compaction and subsequent destruction of pasture plants. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Streambank erosion is a problem in some areas. In some years the seasonal high water table softens the soil surface for brief periods in early spring and thus hinders the use of planting and harvesting equipment. Sugar maple, eastern white pine, yellow poplar, and northern red oak are common on the soil.

The main limitations of this soil on sites for dwellings are flooding and the seasonal high water table. Other soils in the nearby higher landscape positions above flood levels are better suited to this use.

The main limitations of this soil for local roads and streets are flooding and the frost-action potential. Constructing roads on coarse textured fill material above the flood level will prevent the road damage that flooding causes. Laying out roads around the flood plain reduces construction costs and loss of valuable cropland.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are flooding, a poor filtering capacity, and the seasonal high water table. Flooding from adjacent streams can gouge out the distribution lines. Flooding and the seasonal high water table both cause most systems to malfunction. The rapidly permeable substratum is a poor filter of effluent. Consequently, contamination of ground water and the nearby stream is a hazard. Adjacent soils that are not subject to flooding are better suited to this use.

This soil is in capability subclass IIw.

MoB—Morris channery silt loam, 3 to 8 percent slopes. This very deep soil is gently sloping and somewhat poorly drained. It is on upland till plains near the foothills of the Catskill Mountains. Areas of this soil are irregularly shaped and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown channery silt loam about 12 inches thick. In the upper part the subsoil is reddish gray, mottled channery silt loam about 4 inches thick. In the lower part it is weak red, mottled channery silt loam and is extremely firm and brittle. It extends below a depth of 60 inches. This layer is a fragipan.

Included with this soil in mapping are the poorly drained and very poorly drained Ilion soils in depressions and along drainageways. Also included, on the slightly higher parts of the landscape and on steeper slopes, are the moderately well drained Wellsboro soils. Some areas of the moderately deep and shallow, somewhat poorly drained Tuller, Greene, and Angola soils are also included. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Morris soil is perched above the fragipan at a depth of ½ foot to 1½ feet from November to March. The fragipan limits the rooting depth to 16 to 24 inches. Permeability is moderate in the surface layer and the upper part of the subsoil above the fragipan and slow or very slow in the fragipan. Available water capacity is moderate, and surface runoff is slow. The surface layer and the upper part of the subsoil are very strongly acid and moderately acid.

Most of the acreage of this soil is hayland, pasture, and woodland.

This soil is moderately suited to cultivated crops. The seasonal high water table and the depth to the fragipan are the main limitations. Installing drainage ditches and random subsurface drains in the depressions lowers the seasonal high water table and allows earlier use of planting equipment. Cover crops, a conservation tillage system, and crop residue mixed into the soil help maintain organic matter and improve soil tilth.

This soil is moderately well suited to pasture. The seasonal high water table limits spring grazing. Restricting grazing when the soil is wet will prevent surface compaction, destroy pasture grasses, and cause excessive erosion. Diverting runoff and subsurface seepage from the higher adjacent areas helps reduce water accumulation in some areas. Rotation grazing, proper stocking rates, weed control, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderate. The seasonal high water table and restricted rooting depth result in a moderate windthrow hazard. Seeds and seedlings survive well if competing vegetation is controlled. The soil is soft when wet and restricts the use of heavy equipment to periods when the soil is dry or frozen. Sugar maple, hemlock, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Diversions and interceptor drains placed upslope from buildings help divert runoff away from the site.

The main limitations of this soil for local roads and streets are the seasonal high water table and the frost-action potential. A coarse textured subgrade or base material and surface or subsurface drainage will reduce frost action and wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow permeability in the fragipan. A drainage system around the absorption field and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the filter field or the trench below distribution lines will improve percolation.

This soil is in capability subclass IIIw.

MoC—Morris channery silt loam, 8 to 15 percent slopes. This very deep soil is strongly sloping and somewhat poorly drained. It is on upland till plains near the foothills of the Catskill Mountains. Areas of this soil are irregularly shaped and range from 3 to 20 acres in size.

Typically, the surface layer is dark brown channery silt loam about 12 inches thick. In the upper part the subsoil is reddish gray, mottled channery silt loam about 4 inches thick. In the lower part it is weak red, mottled channery silt loam and extends below a depth of 60 inches. This layer is a fragipan.

Included with this soil in mapping are areas of the poorly drained and very poorly drained Ilion soils in

depressions and along drainageways. Also included, on the slightly higher parts of the landscape and on steeper slopes, are some areas of the moderately well drained Wellsboro soils. Moderately deep and shallow, somewhat poorly drained Tuller, Greene, and Angola soils are also included. Included areas are as much as 3 acres and make up 15 percent of this map unit.

The seasonal high water table in this Morris soil is perched above the fragipan at a depth of ½ foot to 1½ feet from November to March. Depth to the fragipan limits the rooting depth to 16 to 24 inches. Permeability is moderate in the surface layer and the upper part of the subsoil above the fragipan and slow or very slow in the fragipan. Available water capacity is moderate, and surface runoff is slow. The surface layer and part of the upper subsoil are very strongly acid to moderately acid.

Most of the acreage of this soil is hayland, pasture, and woodland.

This soil is moderately suited to cultivated crops. The seasonal high water table, the erosion hazard, and the depth to the fragipan are the main limitations. Drainage ditches and random subsurface drains placed in the depressions will lower the seasonal high water table and allow earlier use of planting equipment. A conservation tillage system that leaves crop residue on the surface after planting and contour farming with stripcropping or terraces help control erosion. Cover crops, adding organic material, and incorporating crop residue into the soil help maintain organic matter and improve soil tilth.

This soil is moderately well suited to pasture. The seasonal high water table limits early spring grazing. Grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and cause excessive erosion. Rotation grazing, proper stocking rates, weed control, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderate. The seasonal high water table and restricted rooting depth cause a moderate windthrow hazard. Seeds and seedlings survive well if competing vegetation is controlled. The soil is soft when wet and restricts the use of heavy equipment to periods when the soil is dry or frozen. Sugar maple, hemlock, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Diversions and interceptor drains placed upslope from buildings help divert runoff away from the site.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. Providing a coarse textured subgrade or base material and providing surface or subsurface drainage will reduce frost action and wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow permeability in the fragipan. A drainage system around the absorption field and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trench below distribution lines will improve percolation.

This soil is in capability subclass IIIe.

MrB—Morris channery silt loam, 3 to 8 percent slopes, very stony. This gently sloping soil is very deep and somewhat poorly drained and contains large stones that cover 3 to 15 percent of the surface. It is on upland till plains near the foothills of the Catskill Mountains and on side slopes that have numerous seeps near the origination of drainageways. Areas of this soil are irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is dark brown channery silt loam about 12 inches thick. In the upper part the subsoil is reddish gray, mottled channery silt loam about 4 inches thick. In the lower part it extends below a depth of 60 inches. It is weak red, mottled channery silt loam and is extremely firm and brittle. This layer is a fragipan.

Included with this soil in mapping are areas of the poorly drained Ilion soils in depressions and along drainageways. Also included, on the slightly higher parts of the landscape and on steeper slopes, are the moderately well drained Wellsboro soils. Areas of the moderately deep and shallow, somewhat poorly drained Tuller, Greene, and Angola soils are also included. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Morris soil is perched above the fragipan at a depth of ½ foot to 1½ feet from November to March. Depth to the fragipan limits the rooting depth to 16 to 24 inches. Permeability is moderate in the surface layer and the upper part of the subsoil above the fragipan and slow or very slow in the fragipan. Available water capacity is moderate, and surface runoff is slow.

Most of the acreage of this soil is pasture and woodland.

This soil is not suited to cultivated crops because of the seasonal high water table and many large surface stones. Drainage ditches and subsurface drainage lower the water table and reduce wetness. Removing the large surface stones will allow safe and effective use of tillage and planting equipment. Cover crops, a

conservation tillage system, and incorporating crop residue into the soil help maintain organic matter and improve soil tilth.

This soil is poorly suited to pasture. The seasonal high water table limits spring grazing. The large stones hinder proper pasture maintenance. Grazing when the soil is too wet causes surface compaction. Overgrazing reduces the quantity and quality of forage. Removing stones from the pasture allows yearly mowing, reduces the risk of livestock injury, and increases forage density. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderate. The seasonal high water table makes the soil surface soft in spring and fall and subsequently unable to support heavy harvesting equipment. The seasonal high water table and the depth to the fragipan restrict the root growth and result in a moderate windthrow hazard and seedling mortality rate. Northern red oak, sugar maple, and hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls help prevent wet basements. Diversions and interceptor drains placed upslope from buildings help divert runoff away from the site.

The main limitations for local roads and streets on this soil are the seasonal high water table and the frost-action potential. A coarse textured subgrade or base material and surface or subsurface drainage will reduce frost action and wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow permeability in the fragipan. A drainage system around the absorption field and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trench below distribution lines will improve percolation.

This soil is in capability subclass VIs.

NaB—Nassau channery silt loam, undulating. This undulating soil is shallow and somewhat excessively drained. It is on bedrock-controlled ridges and plains. Areas of this soil are irregularly shaped and range from 3 to 40 acres. Slopes range from 3 to 8 percent.

Typically, the surface layer is dark grayish brown channery silt loam about 8 inches thick. The subsoil is yellowish brown very channery silt loam about 8 inches thick. Dark gray shale bedrock is at a depth of 16 inches.

Included with this soil in mapping, in the concave parts of the landscape, are small areas of the moderately deep, well drained Lordstown and Manlius soils and the somewhat poorly drained Hornell and Greene soils. Areas of rock outcrop also are included in the convex parts of the landscape. In some areas the shale bedrock is interbedded with sandstone that has a higher lime content. Included areas are as much as 3 acres and make up 15 to 25 percent of the map unit.

Depth to bedrock in this Nassau soil is 10 to 20 inches. It restricts the rooting depth. Permeability is moderate. The available water capacity is very low.

Most areas of this soil are used for hay and pasture.

This soil is moderately suited to cultivated crops. Erosion is the main hazard. Some included areas of rock outcrop hinder use of farm machinery. Midsummer droughtiness causes moisture stress and reduces yields. A conservation tillage system that leaves residue on the surface after planting and contour farming or stripcropping help control erosion. Growing cover crops, regularly adding organic material, and returning crop residue to the soil help maintain soil moisture and tilth.

This soil is moderately well suited to pasture. Plant growth is poor in midsummer because of droughtiness. Overgrazing, especially during dry periods, destroys forage and causes excessive erosion. Proper stocking rates, rotation grazing, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Droughtiness causes a high rate of seedling mortality. The windthrow hazard is moderate because of the shallow depth to bedrock and shallow rooting systems. Sugar maple, eastern white pine, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. Areas of included soils and nearby soils that are deeper to bedrock are better suited to this use. However, in many places typical construction equipment can excavate the shale bedrock. For buildings placed on the bedrock, a drainage system around the basement will remove water seeping over the rock. In most areas additional soil material is needed for landscaping.

The main limitation of this soil for local roads and streets is the depth to bedrock. Carefully planning roads will avoid cutting grades into bedrock. However, the shale bedrock is generally weathered and easy to rip with most construction equipment.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. The deeper included or other nearby soils are better suited to this use. Adding soil material suitable for an absorption field is needed.

This soil is in capability subclass IIIe.

NaC—Nassau channery silt loam, rolling. This rolling soil is shallow and somewhat excessively drained. It is on bedrock-controlled ridges and hills. Areas of this soil are long and narrow or irregularly shaped and range from 3 to 40 acres. Slopes range from 3 to 15 percent.

Typically, the surface layer is dark grayish brown channery silt loam about 8 inches thick. The subsoil is yellowish brown very channery silt loam about 8 inches thick. Dark gray shale bedrock is at a depth of 16 inches.

Included with this soil in mapping, on the concave parts of the landscape, are small areas of the moderately deep, well drained Hornell and Greene soils and the well drained Lordstown and Manlius soils. Also included are areas of rock outcrop on the convex parts of the landscape. In some areas the shale bedrock is interbedded with weakly calcareous sandstone bedrock that has a higher lime content. Included areas are as much as 3 acres and make up 10 to 20 percent of the map unit.

Depth to bedrock in this Nassau soil is 10 to 20 inches. It limits the rooting depth. Permeability is moderate. The available water capacity is very low.

Most areas of this soil are used for hay and pasture.

This soil is poorly suited to cultivated crops because of the shallowness to bedrock, the droughtiness in midsummer, and the severe erosion hazard. Also, included areas of rock outcrop can hinder use of farm machinery. Yields are generally low because of the insufficient moisture to sustain optimum growth in midsummer. A conservation tillage system and contour farming in combination with terraces and stripcropping or a crop rotation that includes 1 or more years of grasses and legumes help control erosion. Returning crop residue and regularly adding organic material increase soil moisture during dry periods.

This soil is moderately suited to pasture. Droughtiness in midsummer causes poor plant growth. Overgrazing, especially during dry periods, destroys forage and causes excessive erosion. Proper stocking rates, rotation grazing, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Droughtiness causes a high rate of seedling mortality. The windthrow hazard is moderate because of the shallow rooting depth. Sugar maple, eastern white pine, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. Areas of included soils and nearby soils that are deeper to bedrock are better suited to this use. However, in many places typical construction equipment can excavate the shale bedrock. For buildings placed on the bedrock, a foundation drain around the basement will remove water seeping over the rock. In most areas additional soil material is needed for landscaping. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site and diverting runoff above the site help control erosion.

The main limitation of this soil for local roads and streets is the depth to bedrock. Carefully planning roads will avoid cutting grades into bedrock. However, the shale bedrock is generally weathered and easy to rip with most construction equipment.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. Adding soil material suitable for an absorption field is needed. The deeper included or other nearby soils are better suited to this use.

This soil is in capability subclass IVe.

NrC—Nassau very channery silt loam, rolling, very rocky. This rolling soil is shallow and somewhat excessively drained. It is on bedrock-controlled ridges and hills. Nassau soil makes up about 70 percent of this unit and rock outcrops about 5 to 10 percent. Areas of this soil are long and narrow and range from 3 to more than 100 acres. Slopes range from 8 to 15 percent.

Typically, the surface layer is dark grayish brown very channery silt loam about 8 inches thick. The subsoil is yellowish brown very channery silt loam about 8 inches thick. Dark gray shale bedrock is at a depth of 16 inches.

Included with this soil in mapping are small areas of the moderately deep Manlius and Lordstown soils. In a few places, such as in the towns of Colonie and Bethlehem, a thin mantle of fine sand covers the folded shale and slate bedrock. Beds of calcareous sandstone are also included. Included areas are as much as 3 acres and make up as much as 25 percent of the map unit.

Depth to bedrock in this Nassau soil is 10 to 20 inches. The bedrock restricts the rooting depth. Permeability is moderate. The available water capacity is very low.

This soil is not suited to cultivated crops because of rock outcrops, the slope, the severe erosion hazard, and droughtiness in summer. Rock outcrops and rock fragments on the surface cause excessive wear on farm machinery and provide a poor rooting medium. Establishing a permanent sod crop on this soil is a suitable management practice.

This soil is poorly suited to pasture. Plant growth is poor in summer because of droughtiness. Overgrazing destroys forage and causes excessive erosion. Proper stocking rates, rotation grazing, and restricted grazing

during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Droughtiness causes a high rate of seedling mortality. Windthrow is moderate because of the shallow rooting depth. Sugar maple, eastern white pine, and northern red oak are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the depth to bedrock. The deeper included soils in this unit are better suited to this use. Foundations can be excavated in the dominantly shale bedrock, but additional soil material is needed for landscaping. Erosion during construction is a hazard. Maintaining the vegetative cover adjacent to the site and diverting runoff above the site help control erosion.

The main limitation of this soil for local roads and streets is the depth to bedrock. Carefully planning roads around this soil will avoid excavation of rock. Most construction equipment can rip this shale bedrock.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. Adding soil material suitable for an absorption field is needed. Nearby soils that are deeper and less sloping are better suited to this use.

This soil is in capability subclass VIs.

NrD—Nassau very channery silt loam, hilly, very rocky. This hilly soil is shallow and somewhat excessively drained. It is on bedrock-controlled ridges and hills. Nassau soil makes up about 70 percent of this unit and rock outcrops about 5 to 10 percent. Areas of this soil are long and narrow and range from 3 to more than 100 acres. Slopes range from 15 to 25 percent.

Typically, the surface layer is dark grayish brown very channery silt loam about 8 inches thick. The subsoil is yellowish brown very channery silt loam about 8 inches thick. Dark gray shale is at a depth of 16 inches.

Included with this soil in mapping are small areas of the moderately deep Manlius and Lordstown soils. In a few places, such as in the towns of Colonie and Bethlehem, a thin mantle of fine sand covers the folded shale and slate bedrock. Beds of calcareous sandstone are also included. Included areas are as much as 3 acres in size and make up as much as 20 percent of the map unit.

Depth to bedrock in this Nassau soil is 10 to 20 inches. The bedrock restricts rooting depth. Permeability is moderate. The available water capacity is very low.

This soil is not suited to cultivated crops because of rock outcrops, the slope, the severe erosion hazard, and droughtiness in summer. Rock outcrops, rock fragments on the surface, the slope, and irregular topography restrict use and cause excessive wear of farm machinery. Establishing a permanent sod crop on this soil is a suitable management practice.

This soil is poorly suited to pasture. Droughtiness and the shallow soil result in generally sparse forage. The slope and rock outcrops severely limit use of farm machinery. Overgrazing will destroy pasture plants and accelerate erosion. Proper stocking rates, rotation grazing, and restricted grazing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Droughtiness causes a high rate of seedling mortality. Windthrow is a moderate hazard because of the shallow rooting depth. This hilly soil moderately restricts equipment use. Sugar maple, eastern white pine, and northern red oak are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the depth to bedrock and the slope. The included and other nearby soils that are deeper to bedrock are better suited to this use. Foundations can be excavated in the bedrock, which is dominantly shale, but additional soil material is needed for landscaping. Cutting and filling in establishing benches and grading help overcome the slope limitation. Erosion during construction is a hazard. Maintaining the vegetative cover adjacent to the site, diverting runoff from the higher areas, and mulching help control erosion.

The main limitations of this soil for local roads and streets are the depth to bedrock and the slope. Carefully planning roads around this soil will avoid expensive rock excavation and slope grading. Most construction equipment can rip the shale bedrock.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the depth to bedrock and the slope. Other nearby soils that are less sloping and deeper to bedrock are better suited to this use.

This soil is in capability subclass VIs.

NuB—Nunda silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on the tops of ridges and hills in the rolling plains of the central part of the county. Areas of this soil are roughly oblong to long and narrow and range from 5 to 80 acres in size.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The subsurface layer is yellowish brown to light yellowish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. The upper part is pale brown and brown silt loam. The lower part is dark grayish brown to very dark grayish brown silty clay

loam. The substratum is dark grayish brown to very dark grayish brown clay loam to a depth below 64 inches.

In many areas of this soil rock fragments are in the surface layer. In some included areas the surface layer is gravelly or channery. Areas of the moderately deep, somewhat poorly drained Angola soils are included where depth to shale bedrock is 20 to 40 inches. Small areas of the somewhat poorly drained Burdett soils and the poorly drained Ilion soils are included in drainageways and seep spots at the base of slopes. Areas of included soils range to 3 acres and make up 10 to 15 percent of the map unit.

The seasonal high water table in this Nunda soil is at a depth of 18 to 24 inches from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and in the upper part of the subsoil and slow to very slow below. The available water capacity is high, and runoff is medium.

Most of the acreage is used for corn or hay. Some areas are idle.

This soil is well suited to most crops grown in the area. Erosion is a hazard. Liming is necessary for optimum production of field crops. A conservation tillage system and contour farming or stripcropping help control erosion. Spot drainage in some of the wetter areas allows earlier planting and increased yields. Regularly adding organic material and returning crop residue to the soil improve tilth, increase organic matter content, and increase the water-holding capacity of the soil.

This soil is well suited to pasture. Maintaining ground cover to reduce surface runoff helps control erosion. Restricted grazing when the soil is wet helps prevent surface compaction and destruction of pasture grasses and legumes and reduces the hazard of erosion. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, and eastern white pine are common on the soil. Management limitations are slight.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites divert runoff and lower the water table.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on coarse textured fill material provides drainage away from the roadway.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the subsoil and substratum. Installing a drainage system around the absorption field and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trench below the distribution lines will improve percolation.

This soil is in capability subclass IIe.

NuC—Nunda silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and moderately well drained. It is on the side slopes of hills in the rolling plains of the central part of the county. The areas are long and narrow, or nearly oval, and range from 3 to 65 acres in size.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The subsurface layer is yellowish brown to light yellowish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. The upper part is pale brown and brown silt loam. The lower part is dark grayish brown to very dark grayish brown silty clay loam. The substratum is dark grayish brown to very dark grayish brown clay loam to a depth below 64 inches.

Included with this soil in mapping are small areas of the wetter Angola soils that are moderately deep over shale bedrock. Small areas of the somewhat poorly drained Burdett soils and the poorly drained Ilion soils are also included in drainageways and in seep areas at the base of hills. Included areas are as much as 3 acres and make up 10 to 15 percent of the map unit.

The seasonal high water table in this Nunda soil is at a depth of 18 to 24 inches from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and in the upper part of the subsoil and slow or very slow below. The available water capacity is high, and runoff is medium or rapid.

Most of the acreage is used as cropland or is idle.

This soil is moderately suited to most crops grown in the area. Erosion is a moderate hazard. Liming is needed for optimum production of field crops. A conservation tillage system and contour farming along with stripcropping or terraces help control erosion. Spot drainage in the wetter areas allows early planting and increases yields. Regularly adding organic material and returning crop residue to the soil improve tilth, increase organic matter content, and increase the moisture-holding capacity of the soil.

This soil is moderately well suited to pasture. Maintaining an established pasture helps control erosion. Restricted grazing when the soil is wet helps prevent surface compaction and maintains good cover. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, and

eastern white pine are common on this soil. Management problems are slight.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites divert runoff and reduce wetness. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site and diverting runoff from the higher areas help control erosion.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on coarse textured fill material provides drainage away from the roadways. Erosion is a hazard if these sloping soils are left unprotected.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the subsoil and substratum. A drainage system around the absorption field and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trench below the distribution lines will improve percolation.

This soil is in capability subclass IIIe.

NuD—Nunda silt loam, 15 to 25 percent slopes. This moderately steep soil is very deep and moderately well drained. It is on the side slopes of rolling hills in the uplands and on dissected till plains in the central part of the county. Areas of this soil are oblong to long and narrow and range from 5 to 40 acres in size.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The subsurface layer is yellowish brown to light yellowish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. The upper part is pale brown and brown silt loam. The lower part is dark grayish brown to very dark grayish brown silty clay loam. The substratum is dark grayish brown to very dark grayish brown clay loam to a depth below 64 inches.

Included with this soil in mapping are small areas of the shallow, somewhat excessively drained to moderately well drained Arnot soils and other shallow soils. Small areas of the poorly drained Ilion soils are also included in the narrow drainageways between hills. Areas of included soils are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Nunda soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and in the upper part of the subsoil and slow or very slow below. The available water capacity is high, and runoff is rapid.

Most of the acreage is used as woodland or hayland. Some areas are idle.

This soil is poorly suited to cultivated crops. Erosion is a severe hazard. A conservation tillage system, diversions, crop rotations with 1 or more years of grasses and legumes, and contour farming reduce runoff and control erosion. Regularly adding organic matter and returning crop residue to the soil improve tilth and increase the organic matter content.

This soil is moderately well suited to pasture. The slope is a moderate limitation. Erosion is a moderate hazard. Restricted grazing when the soil is wet helps maintain an established pasture, provides a good vegetative cover, and controls erosion. Rotation grazing, proper stocking rates, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The common trees on the soil are sugar maple and northern red oak. Erosion is a moderate hazard. The slope is a moderate limitation to use of equipment. Other management problems are moderate or slight.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. Foundation drains and interceptor drains upslope from construction sites divert runoff and reduce wetness. Cutting and filling in constructing benches and grading help overcome the slope limitation. Erosion is a severe hazard during construction. Maintaining the vegetative cover adjacent to the site, diverting runoff from the higher areas, and mulching help control erosion.

The main limitations of this soil for local roads and streets are the slope and the frost-action potential. Constructing roads on coarse textured fill material provides drainage away from the roadway and reduces the frost-action potential. Careful planning helps control erosion.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation, and the slope. Installing a drainage system around the absorption fields and diversions to intercept runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trench below the distribution lines will improve percolation. Installing distribution lines on the contour with drop boxes or other structures will ensure even distribution of effluent.

This soil is in capability subclass IVe.

NuE—Nunda silt loam, 25 to 35 percent slopes. This steep soil is very deep and moderately well drained. It is on the steeper side slopes of rolling hills and dissected till plains in the central part of the county. Areas of this soil are oblong to long and narrow and range from 5 to 150 acres in size.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The subsurface layer is yellowish brown to light yellowish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. The upper part is pale brown and brown silt loam and the lower part is dark grayish brown to very dark grayish brown silty clay loam. The substratum is dark grayish brown to very dark grayish brown clay loam to a depth below 64 inches.

Included with this soil in mapping are steep areas of exposed glacial till or bedrock. Erosion has removed the vegetative cover from these areas. Also included are areas of soils where bedrock is at a depth of less than 60 inches. Included areas are as much as 3 acres and make up 25 percent of the map unit.

The seasonal high water table in this Nunda soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and in the upper part of the subsoil and slow or very slow below. The available water capacity is high, and runoff is rapid.

Most of the acreage is used as woodland. This soil is not suitable for cropping because of the slope and exposed bedrock. Erosion is a severe hazard.

This soil is poorly suited to pasture. The slope is a severe limitation. Restricted grazing when the soil is wet reduces surface compaction and puddling, prevents destruction of pasture grasses, and controls erosion. Rotation grazing, proper stocking rates, and restricted grazing during wet periods help maintain the desirable pasture plants.

The potential productivity of this soil for sugar maple is moderate. Wooded areas commonly support sugar maple and northern red oak. Erosion is a moderate hazard. The slope is a severe limitation to use of equipment. Other management problems are moderate or slight.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. These limitations make construction operations difficult. The included and other nearby soils that are less sloping are better suited to use as sites for dwellings with basements.

The main limitations of this soil for local roads and streets are the slope and the frost-action potential. Coarse textured fill material will reduce frost heave. The slope makes locating roads difficult. Erosion is a severe hazard.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation, and the slope. Other nearby soils that are less sloping are better suited to this use. Finding suitable sites and installation are difficult on this soil.

This soil is in capability subclass VIe.

NvC—Nunda silt loam, 3 to 15 percent slopes, very stony. This gently sloping to strongly sloping soil is very deep and moderately well drained. Large stones cover 3 to 15 percent of the surface. The soil is on the tops of ridges and drumloidal hills and in positions between hilltops and near drainageways. Areas of this soil are oblong or irregularly shaped and range from 5 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The subsurface layer is yellowish brown to light yellowish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. The upper part is pale brown and brown silt loam and the lower part is dark grayish brown to very dark grayish brown silty clay loam. The substratum is dark grayish brown to very dark grayish brown clay loam to a depth below 64 inches.

Included with this soil in mapping are areas of the poorly drained Ilion soils or the poorly drained to very poorly drained Madalin soils in depressions and along drainageways. In places the surface of the Nunda soil is less stony and is less of a limitation to tillage. Included areas are as much as 3 acres and make up 20 to 30 percent of the map unit.

The seasonal high water table in this Nunda soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and in the upper part of the subsoil and slow or very slow below. The available water capacity is high, and runoff is medium or rapid.

Most of the acreage is used as pasture or woodland or is idle.

This soil is not suited to cultivated crops because of the slope and stones on the surface. Erosion is a hazard.

This soil is poorly suited to pasture. The surface stones are a severe limitation. Preventing overgrazing and restricting grazing when the soil is wet reduce surface compaction, prevent destruction of pasture grasses, and control erosion. Proper stocking rates, rotation grazing, and yearly mowing to control brush and weeds help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple and northern red oak are common on the soil. Although in some areas machine planting is feasible, in other areas scattered stones limit the use of equipment.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites will divert runoff and lower the water table. Erosion is a hazard during construction.

Maintaining the vegetative cover adjacent to the site, diverting runoff from above, and mulching help control erosion.

The main limitation of this soil for local roads and streets is the frost-action potential. Coarse textured fill material will provide drainage away from the roadway and reduce the frost-action potential. Erosion is a hazard unless the surface is protected.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing drainage around the absorption field and diversions to intercept runoff will reduce wetness. Enlarging the absorption field or the trench below the distribution lines will improve percolation.

This soil is in capability subclass VIs.

NvE—Nunda silt loam, 15 to 35 percent slopes, very stony. This moderately steep to steep soil is very deep and moderately well drained. Large stones cover 3 to 15 percent of the surface. The soil is on the side slopes of hills. Areas are generally long and narrow or irregularly shaped and range from 10 to 80 acres in size.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The subsurface layer is yellowish brown to light yellowish brown silt loam about 6 inches thick. The subsoil is 28 inches thick. The upper part is pale brown and brown silt loam and the lower part is dark grayish brown to very dark grayish brown silty clay loam. The substratum is dark grayish brown to very dark grayish brown clay loam to a depth of 64 inches.

Included with this soil in mapping are small steep areas of exposed glacial till or bedrock. Erosion has removed the vegetative cover from these areas. Also included are areas of soils that are wetter than the Nunda soil. These soils are in seep spots and drainageways. In some pedons the Nunda soil has fewer surface stones. Included areas are as much as 3 acres and make up 10 to 20 percent of the map unit.

The seasonal high water table in this Nunda soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and in the upper part of the subsoil and slow to very slow below. The available water capacity is high, and runoff is rapid.

Most of the acreage is used as woodland.

This soil is not suited to cultivated crops because of the slope and numerous stones on the surface. In cleared areas where runoff is rapid, erosion is a hazard.

This soil is poorly suited to pasture. The slope and many large stones on the surface are severe limitations. Avoiding overgrazing will prevent destruction of pasture grasses and help control erosion. Proper stocking rates and rotation grazing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Wooded areas commonly support sugar maple and northern red oak. Erosion is a moderate hazard. The slope is a moderate limitation to use of equipment. However, stones generally prohibit machine planting on this soil.

The main limitations of this soil on sites for dwellings with basements are the seasonal high water table and the slope. The included and other nearby soils that are less sloping are better suited to this use. The slope makes construction operations difficult. Foundation drains and interceptor drains will reduce wetness. Cutting and filling and grading to establish benches help overcome the slope limitation. Erosion is a hazard during construction. Maintaining a vegetative cover adjacent to the site, diverting runoff from the higher areas, and mulching help control erosion.

The main limitations of this soil for local roads and streets are the slope and the frost-action potential. Coarse textured fill material will reduce the frost-action potential. Constructing roads on the contour, landshaping, and grading help overcome the slope limitation.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slow percolation, and the slope. Septic tank absorption fields on this soil will work if located in the less sloping areas. Installing drainage around the field and building diversions to intercept runoff from the higher areas reduce wetness. Enlarging the absorption field or the trenches below the distribution lines will improve percolation. Placing distribution lines on the contour and using drop boxes or other structures will ensure even distribution of effluent and enable the system to operate more effectively.

This soil is in capability subclass VIIs.

OqB—Oquaga channery silt loam, 3 to 8 percent slopes. This gently sloping soil is moderately deep and well drained to somewhat excessively drained. It is on bedrock-controlled upland till plains. Areas of this soil are long and narrow and range from 10 to 25 acres in size.

Typically, the surface layer is dusky red channery silt loam about 8 inches thick. The subsoil is reddish brown very channery silt loam about 17 inches thick. The substratum is dark reddish gray extremely channery silt loam to a depth of 30 inches. Interbedded shale and siltstone bedrock is at a depth of 30 inches.

Included with this soil in mapping, on slopes at the slightly higher elevations, are small areas of the

shallower, somewhat excessively drained Arnot and Kearsarge soils. Also included are areas of Tuller and Greene soils in depressions and drainageways. Also included, on upland till plains where bedrock is at a depth of more than 40 inches, are some areas of the deep, well drained Lackawanna soils, the moderately well drained Wellsboro soils, and the somewhat poorly drained Morris soils. Areas of included soils are as much as 3 acres and make up 10 to 20 percent of the map unit.

Depth to bedrock in the Oquaga soil is 20 to 40 inches. The water table is below a depth of 6 feet. Depth to bedrock restricts the rooting depth. Permeability is moderate. The available water capacity is very low, and runoff is rapid or very rapid.

Most acres of this soil are used for hay and pasture.

This soil is well suited to many crops grown in the area. It is somewhat droughty. Erosion is a moderate hazard. The many small stones limit tillage operations and can excessively wear machinery. The droughtiness of this soil adversely affects crops during periods of dry weather. Cover crops, returning crop residue to the soil, and a conservation tillage system reduce runoff and control erosion. These practices also increase organic matter content and soil moisture and improve soil tilth.

This soil is well suited to pasture. Moderate depth to bedrock causes this soil to be droughty during periods of dry weather. Restricted grazing during dry periods helps maintain an established pasture. Applications of lime and fertilizer are needed to maintain good seeding stands. Erosion is a moderate hazard. Rotation grazing, proper stocking rates, and mowing reduce runoff, control erosion, and keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Planting trees early in the season increases seedling survival. Other management problems are slight. Sugar maple, northern red oak, black cherry, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the moderate depth to bedrock. Building above the bedrock and landscaping with additional fill help overcome this limitation. This soil is better suited to dwellings without basements. In some areas ground water seeps out on top of the bedrock. Footing drains help overcome this problem.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock and the frost-action potential. Coarse textured fill material will provide drainage away from the roadway and reduce the frost-action potential. Carefully planning roadways and grades helps avoid removal of rock.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the moderate depth to bedrock. Septic systems in deeper areas of the soil will properly filter effluent.

This soil is in capability subclass IIe.

OqC—Oquaga channery silt loam, 8 to 15 percent slopes. This strongly sloping soil is moderately deep and well drained to somewhat excessively drained. It is on bedrock-controlled upland till plains. Areas of this soil are long and narrow and range from 15 to 35 acres in size.

Typically, the surface layer is dusky red channery silt loam about 8 inches thick. The subsoil is reddish brown very channery silt loam about 27 inches thick. The substratum is dark reddish gray extremely channery silt loam to a depth of 30 inches. Interbedded shale and siltstone bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow, somewhat excessively drained Arnot soils. Also included are areas of soils that have more small surface stones than the Oquaga soil. Scattered areas of rock outcrop are also included. Areas of Tuller and Greene soils are included in drainageways and slight depressions. Small areas of the moderately well drained Wellsboro soils and the well drained Lackawanna soils are included where bedrock is at a depth of more than 40 inches. Included areas are as much as 3 acres and make up 10 to 15 percent of the map unit.

Depth to bedrock in the Oquaga soil is 20 to 40 inches. The water table is below a depth of 6 feet. Depth to bedrock restricts the rooting depth. Permeability is moderate. The available water capacity is very low, and runoff is rapid.

Most of the acreage of this soil is used for hay and pasture.

This soil is moderately suited to cultivated crops. It is droughty, and erosion is a hazard. Small surface stones limit tillage operations and can excessively wear machinery. Droughtiness is a problem from midsummer to late summer. A conservation tillage system, contour farming, and stripcropping or terraces reduce runoff and control erosion. These practices, crop rotations, and long-term hay will increase the water-holding capacity, help maintain organic matter content, and promote good soil tilth.

This soil is moderately well suited to pasture. Moderate depth to bedrock causes droughtiness during dry periods in summer. Restricted grazing during dry periods helps maintain an established pasture and provide a good cover. Erosion is a hazard. Rotation grazing, proper stocking rates, applications of lime and fertilizer, and yearly mowing where possible help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, black

cherry, and eastern white pine are common on the soil. Planting seedlings early in spring increases seedling survival.

The main limitation of this soil on sites for dwellings with basements is the moderate depth to bedrock. Building above the bedrock and landscaping with fill help correct this problem. This soil is better suited to dwellings without basements. In some areas ground water seeps out on top of the bedrock. Footing drains will overcome this problem. Erosion is a hazard during construction. Maintaining vegetation adjacent to the site, diverting runoff from the higher areas, and mulching help control erosion.

The main limitations of this soil for local roads and streets are the slope, the moderate depth to bedrock, and the frost-action potential. Constructing roads with coarse textured fill material allows drainage away from the roadway and reduces the frost-action potential. Adapting the design to the lay of the land or shaping and grading help overcome the slope limitation. Carefully planning road grades and locations will avoid removal of bedrock.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the moderate depth to bedrock. Septic systems in deeper areas of this soil will properly filter effluent. Groundwater contamination is a hazard.

This soil is in capability subclass IIIe.

OqD—Oquaga channery silt loam, 15 to 25 percent slopes. This moderately steep soil is moderately deep and well drained to somewhat excessively drained. It is on bedrock-controlled upland till plains. Areas of this soil are long and narrow and range from 10 to 25 acres in size.

Typically, the surface layer is dusky red channery silt loam about 8 inches thick. The subsoil is reddish brown very channery silt loam about 17 inches thick. The substratum is dark reddish gray extremely channery silt loam to a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow, somewhat excessively drained Arnot soils. Also included are areas of soils that have more small surface stones than the Oquaga soil. Areas of scattered rock outcrop are also included. Small areas of the moderately well drained Wellsboro soils and the well drained Lackawanna soils are included where bedrock is at a depth of more than 40 inches. Included areas are as much as 3 acres and make up 10 to 20 percent of this map unit.

Depth to bedrock in this Oquaga soil is 20 to 40 inches. Depth to the water table is more than 6 feet. Depth to bedrock restricts the rooting depth. Permeability is moderate. The available water capacity is very low, and runoff is very rapid.

Most of the acreage is used as woodland.

This soil is poorly suited to cultivated crops. It is droughty. Erosion is a hazard. Droughtiness is a problem for some crops in dry summers. A conservation tillage system and crop rotations including long-term hay help control erosion, increase water-holding capacity, maintain organic matter content, and promote good soil tilth.

This soil is moderately suited to pasture. Moderate depth to bedrock causes droughtiness during dry periods in summer. Restricted grazing during dry periods helps maintain seedlings and good cover. Erosion is a hazard. Rotation grazing, proper stocking rates, and applications of lime and fertilizer help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Planting seedlings early in spring reduces seedling mortality. The slope is a moderate limitation to use of equipment. Building logging roads on the contour helps control erosion. Sugar maple, northern red oak, black cherry, and eastern white pine are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the slope and the moderate depth to bedrock. Building above the bedrock and landscaping with additional fill help overcome the bedrock limitation. This soil is better suited to use as sites for dwellings without basements. In some areas ground-water seepage is a problem. Installing footing drains will correct this problem. Erosion is a hazard during construction. Maintaining vegetation adjacent to the site, diverting runoff from the higher areas, and timely revegetation of disturbed areas help control erosion.

The main limitation of this soil for local roads and streets is the slope. Moderate depth to bedrock also limits road construction. Adapting road design to the lay of the land or landshaping and grading help overcome the slope limitation. Carefully planning road locations and grades will avoid removal of rock.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the moderate depth to bedrock and the slope. Septic systems in deeper areas of this soil will properly filter effluent. Placing distribution lines on the contour with drop boxes or other structures to ensure even distribution of effluent will allow more effective operation of the system.

This soil is in capability subclass IVe.

Pa—Palms muck. This nearly level soil is very deep and very poorly drained. Areas of the soil are in swamps, bogs, and marshes within glaciated uplands

and outwash plains in the county. Areas are long and narrow or oblong and range from 5 to 50 acres in size. Slopes range from 0 to 2 percent.

Typically, this soil is muck to a depth of about 42 inches. The upper part is black and the lower part is very dark brown. The substratum is dark gray silt loam to a depth of 98 inches or more.

Included with this soil in mapping are small areas of the very poorly drained Carlisle soils near the center of bogs, where the muck is thicker than in the Palms soil, and very poorly drained mineral soils near the margins of bogs. Also included, where streams meander through this soil, are small areas of Fluvaquents. Also included are areas of Medihemists and Hydraquents at the center of bogs. Areas of included soils are as much as 3 acres and make up 10 to 25 percent of the map unit.

The seasonal high water table in the Palms soil is less than 1 foot from November to May. This soil receives runoff from adjacent areas, and water is ponded on the surface for long periods in fall, winter, and spring. Depth to bedrock is more than 60 inches. The water table limits the rooting depth of water-tolerant plants to a depth of 12 inches. Permeability is moderately slow to moderately rapid in the muck and moderately slow or moderate in the substratum. The available water capacity is high, and runoff is very slow or ponded. The surface layer ranges from strongly acid to neutral.

Most areas of this soil are not drained for agriculture and are used as woodland or habitat for wildlife.

This soil is not suited to cultivated crops and pasture. The high water table and ponding of surface water for prolonged periods of the year are severe limitations to most agricultural uses. In many areas drainage is not feasible because this soil is mainly on the lowest parts of the landscape and suitable outlets are not available. Also, drainage increases subsidence and the rate of decomposition of the organic material. A system of water management that lowers the water table only during the growing season will reduce subsidence and decomposition. In drained areas wind erosion is a hazard. Windbreaks and leaving crop residue on the surface control wind erosion.

The potential productivity of this soil for red maple is moderate. The rate of seedling mortality is high for many tree species because of the seasonal high water table and poor aeration. This soil is generally not suited to trees. The seasonal high water table limits root growth and increases the windthrow hazard. The seasonal high water table and low strength severely limit use of harvesting equipment. Red maple and quaking aspen are common on the soil.

The limitations of this soil on sites for dwellings are subsidence, low strength, and ponding. Nearby soils are better suited to use as sites for dwellings. These include Colonie soils and other mineral soils that are better drained and on the higher parts of the landscape.

The main limitations of this soil for local roads and streets are ponding, the frost-action potential, and subsidence. Carefully planning roads around areas of these soils will avoid these problems. If roads are built on this soil, a coarse textured mineral soil subgrade or base material is needed to replace the soft organic deposits and raise the road grade above the ponding level.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are ponding and a poor filtering capacity. This soil is a poor filter of effluent. Consequently, other adjacent soils are better suited to this use. Ground water contamination is a hazard.

This soil is in capability subclass Vw.

Pm—Pits, gravel. This map unit consists of areas where sand and gravel material have been excavated for use in construction. These excavations are dominantly in glacial outwash but are also in loose, sandy, glacial till deposits. The pits are 3 to 50 feet deep and have steep sides and a relatively level bottom. Stones and boulders are commonly scattered on the pit floor. These areas are generally irregular or blocky in shape and range from 5 to 80 acres in size.

Included in this map unit are small areas where bedrock has been exposed. Small areas of loamy, silty, or clayey materials are piled on some pit floors. Some gravel pits have small pools of water. Other pits have been filled with salvaged topsoil and have been partially reclaimed.

Permeability varies but is generally moderately rapid to very rapid. Available water capacity is very low, and the soil conditions are generally droughty. Soil reaction is dominantly extremely acid to strongly acid throughout.

The suitability of this map unit for any use must be based on onsite investigation.

Areas of this map unit are generally unsuited to farming because of the very low moisture levels and the high proportion of gravel and cobblestones.

The droughty conditions limit pasture and woodland use.

Areas of this map unit are limited in suitability for most urban uses. They are droughty, and vegetation is difficult to establish. If they are used as sites for septic tank absorption fields, ground-water contamination is a hazard.

This unit has not been assigned a capability subclass.

Pn—Pits, quarry. This map unit consists of excavations into various kinds of bedrock, including shale, limestone, and sandstone. The rock material has been removed for road subgrade and other construction purposes. Areas are 5 to 80 feet deep. They have nearly vertical sides and relatively level floors. Piles of rock are commonly scattered across parts of the quarry floor. Some quarries have small pools of water. Areas of this unit vary in shape, depending on ownership boundaries and the bedrock strata, but they are generally blocky. They are mainly 3 to 5 acres in size, but at least two large quarries cover more than 20 acres.

Areas no longer quarried are mostly idle. Herbaceous plants are anchored in a few crevices inside walls and along quarry floors.

Abandoned quarries are generally unsuitable for crops and for urban and recreation uses. Reclaiming areas is very difficult because very little soil material is available for landscaping and revegetation. If waste materials from septic tanks are dumped on abandoned quarry floors, ground-water contamination is a hazard. Some areas provide excellent sites for viewing geologic strata.

This unit has not been assigned a capability subclass.

Ra—Raynham very fine sandy loam. This nearly level soil is very deep and poorly drained. It is on the lake plain mostly in the eastern part of the county. Areas of this soil are oval or irregular in shape and range from 3 to 100 acres. Slopes range from 0 to 3 percent.

Typically, the surface layer is very dark grayish brown very fine sandy loam about 11 inches thick. The subsoil is brown and grayish brown very fine sandy loam about 13 inches thick. The substratum is brown and grayish brown very fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of somewhat poorly drained soils. Also included are small areas of the moderately well drained Scio soils in the slightly higher elevations. Also included are areas of very poorly drained soils in small depressions. A few small areas that have a surface layer of fine sandy loam or loamy fine sand are also included. Small areas of the poorly drained Shaker soils are included where loamy outwash overlies clayey lacustrine sediments. Small areas of the somewhat poorly drained Cosad soils are included where sandy lacustrine sediments overlie clayey lacustrine sediments. Small gently sloping areas are also included. Areas of included soils are as much as 3 acres and make up 15 to 25 percent of the map unit.

The seasonal high water table in this Raynham soil is at a depth of ½ foot to 2 feet from November to May. Depth to bedrock is more than 60 inches. The seasonal high water table limits the rooting depth. Permeability is moderate to moderately slow in the solum and slow in the substratum. The available water capacity is high, and runoff is slow.

Most areas of this soil have been drained for crops and are woodland or hayland. A few areas are used for cultivated crops.

This soil is moderately suited to cultivated crops. In drained areas it is among the best suited soils in the county for food and fiber production. The seasonal high water table is the main limitation. In some years it delays planting in spring and restricts the choice of crops. Drainage will improve crop responses and prevent planting and harvesting delays. Cover crops, a conservation tillage system, incorporating crop residue into the soil, and tillage at the proper moisture level will improve soil tilth and increase organic matter content.

This soil is moderately well suited to pasture. Overgrazing and grazing when the soil is wet cause surface compaction, destroy the seeding, and increase the erosion hazard. Rotation grazing, proper stocking rates, and yearly mowing to reduce brush and weeds help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. The seasonal high water table makes the soil soft and severely limits equipment use. The seedling mortality rate is moderate because of the seasonal high water table and poor aeration. Windthrow is a severe hazard because of shallow rooting. Eastern white pine, elm, and eastern hemlock are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and intercepter drains upslope from construction sites divert runoff and help prevent the damage that the seasonal high water table causes. The soil is better suited to use as sites for dwellings without basements.

The main limitations of this soil for local roads and streets are the seasonal high water table and the frost-action potential. Constructing roads on coarse textured fill material will reduce the frost-action potential. Raising the level of the fill will reduce wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Sites on other adjacent soils and on the included soils, such as Scio soils, are better suited to this use.

This soil is in capability subclass IIIw.

RhA—Rhinebeck silty clay loam, 0 to 3 percent slopes. This nearly level soil is very deep and

somewhat poorly drained. It is on lake plains in the eastern part of the county. Areas of this soil are broad and irregularly shaped and range from 2 to 50 acres in size.

Typically, the surface layer is dark brown silty clay loam about 7 inches thick. The subsoil is 27 inches thick. The upper part is dark yellowish brown and brown silty clay and silty clay loam. The middle part is dark grayish brown silty clay. The lower part is dark yellowish brown silty clay. The substratum is dark brown, dark yellowish brown, and dark grayish brown silty clay to a depth of 64 inches or more.

Included with this soil in mapping are small areas of the poorly drained or very poorly drained Madalin soils in depressions and along drainageways. Also included are small areas of the poorly drained Raynham soils around the edges of the mapped areas of the Rhinebeck soil. Areas of included soils are as much as 3 acres and make up about 10 percent of the map unit.

The seasonal high water table in this Rhinebeck soil is at a depth of ½ foot to 1½ feet. Depth to bedrock is more than 60 inches. The seasonal high water table limits the rooting depth. Permeability is moderately slow in the surface and subsurface layers and slow below. The available water capacity is moderate, and runoff is slow.

Most of the acreage is used as cropland, hayland, or pasture.

This soil is moderately suited to cultivated crops. The seasonal high water table and slow permeability in the subsoil are the main limitations. Drainage is difficult in the slowly permeable, clayey subsoil and substratum, and drains are effective only if closely spaced. Drainage improves soil management and crop response and increases yields. A conservation tillage system, cover crops, returning crop residue to the soil, and tillage at the proper moisture content help maintain soil tilth and increase organic matter content.

This soil is moderately well suited to pasture. Grazing early in spring and during wet periods causes surface compaction and destroys seedings. Rotation grazing, proper fertilization, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The erosion hazard, seedling mortality, and windthrow hazard are generally slight limitations. The wet, soft soil is a moderate limitation to use of equipment. In most years machine planting is delayed in spring. Red maple, northern red oak, sugar maple, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites will divert runoff and help prevent wet basements.

The main limitations of this soil for local roads and streets are the seasonal high water table, the low strength, and the frost-action potential. Constructing roads on raised, coarse textured fill material will reduce the frost-action potential and improve soil strength. Raising the level of fill material will reduce wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing a drainage system around the absorption field and intercepting runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trenches below the distribution lines will improve percolation.

This soil, especially when wet, has low bearing capacity. Excavations and cutbanks will cave or slough.

This soil is in capability subclass IIIw.

RhB—Rhinebeck silty clay loam, 3 to 8 percent slopes. This gently sloping soil is very deep and somewhat poorly drained. It is on the lake plains in the eastern part of the county. Areas of this soil are broad and irregularly shaped and range from 2 to 25 acres in size.

Typically, the surface layer is dark brown silty clay loam about 7 inches thick. The subsoil is 27 inches thick. The upper part is dark yellowish brown and brown silty clay and silty clay loam. The middle part is dark grayish brown silty clay. The lower part is dark yellowish brown silty clay. The substratum is dark brown, dark yellowish brown, and dark grayish brown silty clay to a depth of 64 inches or more.

Included with this soil in mapping are small areas of the poorly drained and very poorly drained Madalin soils in depressions and along drainageways. Also included, at the slightly higher elevations or around the edges of the Rhinebeck soil, are the poorly drained Raynham soils and the moderately well drained Claverack soils. Areas of included soils are as much as 3 acres and make up about 10 to 20 percent of the map unit.

The seasonal high water table in this Rhinebeck soil is at a depth of 6 to 18 inches from January to May. Depth to bedrock is more than 60 inches. The seasonal high water table limits the rooting depth. Permeability is moderately slow in the surface layer and subsurface layer and slow below. The available water capacity is moderate, and runoff is slow.

Most of the acreage is used as cropland, hayland, or pasture.

This soil is moderately suited to cultivated crops. The seasonal high water table and slow permeability in the subsoil are the main limitations. Drainage is difficult in the slowly permeable, clayey subsoil and substratum,

and drains are effective only if closely spaced. Drainage improves soil management, crop response, and higher yields. Erosion is a problem in cultivated areas where bare soil is exposed. A conservation tillage system and contour farming or stripcropping help control erosion. Cover crops, returning crop residue to the soil, and tillage at the proper moisture content help maintain soil tilth and increase organic matter content.

This soil is moderately well suited to pasture. Grazing early in spring and during wet periods causes surface compaction and destroys seedlings. Rotation grazing, proper fertilization, proper stocking rates, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. The erosion hazard, seedling mortality, and the windthrow hazard are generally slight limitations. The wet, soft soil is a moderate limitation to use of equipment. In most years machine planting is delayed in spring. Red maple, northern red oak, sugar maple, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites will divert runoff and reduce wetness.

The main limitations of this soil for local roads and streets are the seasonal high water table, low strength, and the frost-action potential. Constructing roads on raised, coarse textured fill material will reduce the frost-action potential and improve soil strength. Raising the level of fill material will reduce wetness.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing drainage around the field and intercepting runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trenches below the distribution lines will improve percolation.

This soil has a low bearing capacity, especially when it is wet. Excavations and cutbanks will cave or slough.

This soil is in capability subclass IIIw.

RkA—Riverhead fine sandy loam, 0 to 3 percent slopes. This nearly level soil is very deep and well drained. Areas of this soil are on low terraces near Normanskill Creek and near the 300-foot contour above the Mohawk River and in parts of the lake plain. Areas of this soil are roughly oval to oblong and range from 5 to 30 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 11 inches thick. The yellowish brown subsoil is 20 inches thick. It is fine sandy loam in the upper part, sandy loam in the middle part, and loamy fine sand in the lower part. The substratum is olive brown gravelly fine sand to a depth of 65 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Sudbury soils. Also included are areas of the well drained to excessively drained Colonie soils and areas of soils that have a gravelly surface layer. Areas of included soils range from 1 to 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Riverhead soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the surface layer and the subsoil and very rapid in the substratum. The available water capacity is moderate, and runoff is slow or medium.

Most of the acreage is used for general farming or truck crops. Some areas are idle.

This soil is well suited to most cultivated crops grown in the area. It ranks among the best suited soils in the county for food and fiber production. In particular, it is suited to potato crops. In many years, the soil is droughty and irrigation is needed. It responds readily to lime and fertilizer, and small, frequent applications are best. A conservation tillage system, cover crops, and returning crop residue to the soil increase organic matter content and the water-holding capacity.

This soil is well suited to pasture. In some years it is droughty in late summer. Rotation grazing, proper stocking rates, weed control, applications of lime and fertilizer, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Limitations to woodland use and management are generally slight. Sugar maple, northern red oak, black cherry, and eastern white pine are common on the soil.

This soil has no limitations on sites for dwellings with basements.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on coarse textured subgrade or base material will reduce the frost-action potential.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. The soil is very rapidly permeable in the substratum and so is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent.

This soil is a probable source of sand and gravel.

This soil is in capability subclass IIs.

RkB—Riverhead fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is very deep and well drained. Areas of this soil are on low terraces near

major creeks or rivers and near the 300-foot contour in parts of the lake plain. They are roughly oblong and range from 5 to 25 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 11 inches thick. The yellowish brown subsoil is 20 inches thick. It is fine sandy loam in the upper part, sandy loam in the middle part, and loamy fine sand in the lower part. The substratum is olive brown gravelly fine sand to a depth of 65 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Sudbury soils. Also included are areas of the well drained to excessively drained Colonie soils and areas of soils that have a gravelly surface layer. Also included, where deep deposits of silt occur, are small areas of the well drained Unadilla soils and the moderately well drained Scio soils. Areas of included soils range from 1 to 3 acres and make up 10 to 15 percent of the map unit.

The seasonal high water table in this Riverhead soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the surface layer and the subsoil and very rapid in the substratum. The available water capacity is moderate, and runoff is medium.

Most of the acreage is used for truck crops or general farming. Some areas are wooded or are idle.

This soil is well suited to most cultivated crops grown in the area. It ranks among the best suited soils in the county for food and fiber production. In particular, it is suited to potato crops. In many years, the soil is droughty and irrigation is needed. Erosion is a moderate hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming help control erosion. This soil responds readily to lime and fertilizer, and small, frequent applications are best. Cover crops and returning crop residue to the soil increase organic matter content and the water-holding capacity of the soil.

This soil is well suited to pasture. In some years it is droughty during late summer. Rotation grazing, proper stocking rates, yearly mowing, applications of lime and fertilizer, and restricted grazing during dry periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, black cherry, and eastern white pine are common on the soil. Limitations to woodland management are generally slight.

This soil has no limitations on sites for dwellings with basements. Erosion is a hazard on areas of bare soil.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on coarse textured subgrade material will reduce the frost-action potential. Erosion is a hazard on this gently sloping soil.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. The soil is rapidly permeable in the substratum and is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent.

This soil is a probable source of sand and gravel.

This soil is in capability subclass IIs.

RkC—Riverhead fine sandy loam, 8 to 15 percent slopes. This sloping soil is very deep and well drained. Areas of this soil are on the edges of low terraces or on slight ridges near the 300-foot contour on the lake plain near major streams and rivers. Most areas are roughly oval or in narrow bands parallel to slopes and range from 5 to 35 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 11 inches thick. The yellowish brown subsoil is 20 inches thick. It is fine sandy loam in the upper part, sandy loam in the middle part, and loamy fine sand in the lower part. The substratum is olive brown gravelly fine sand to a depth of 65 inches or more.

Included with this soil in mapping are small areas of the sandier Colonie soils. Also included are small areas of soils that have a gravelly surface layer and areas of the moderately well drained Scio soils. Areas of included soils are as much as 3 acres and make up about 10 percent of the map unit.

The seasonal high water table in this Riverhead soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the surface layer and the subsoil and very rapid in the substratum. The available water capacity is moderate, and runoff is medium.

Most of the acreage is used for cultivated crops or pasture. Some areas are wooded or are idle.

This soil is moderately suited to most crops grown in the area. In many years it is droughty in mid or late summer. Irrigation is not practical on this strongly sloping soil. Early warming of this soil in spring allows planting early in the season. Erosion is a serious hazard. A conservation tillage system that leaves residue on the surface after planting and contour farming along with stripcropping or terraces help control erosion. Crops respond well to lime and fertilizer. Regularly adding organic material and returning crop residue to the soil increase organic matter content and the water-holding capacity of the soil.

This soil is moderately well suited to pasture, but droughtiness is a limitation in late summer.

Overgrazing, particularly during dry periods, destroys pasture seedings and increases the hazard of erosion. Proper stocking rates, rotation grazing, yearly mowing, and applications of lime and fertilizer help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, black cherry, and eastern white pine are common on the soil. Limitations to woodland management are generally slight.

The limitation of this soil on sites for dwellings with basements is the slope. Designing dwellings to conform to the natural lay of the land helps overcome the slope limitation. Small surface stones are a limitation for lawns and landscaping. Erosion is a hazard, especially in accumulations of surface water.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing local roads and streets on a coarse textured subgrade will reduce the frost-action potential. Adapting road design to the lay of the land helps overcome the slope limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is a poor filtering capacity. The soil is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent.

This soil is in capability subclass IIIe.

ScA—Scio silt loam, 0 to 3 percent slopes. This nearly level soil is very deep and moderately well drained. It formed in water-deposited silt and very fine sand and is on lake plains in the eastern part of the county. Areas of this soil are irregularly shaped and range from 3 to 45 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is 26 inches thick. The upper part is yellowish brown silt loam. The middle part is dark brown, mottled loam. The lower part is yellowish brown, brown, and dark yellowish brown, mottled silt. The substratum extends to a depth of 65 inches or more. The upper part is brown and yellowish brown silt loam that has reddish brown varves of silty clay. The lower part is brown, yellowish brown, and light yellowish brown silt that has varves of reddish brown and pale brown silty clay.

Included with this soil in mapping are small areas of the poorly drained Raynham soils along drainageways and the well drained Unadilla soils in the higher areas on the landscape. A few areas of the moderately well drained Elmridge soils are included where fine sandy loam overlies silty clay. Areas of moderately well drained and somewhat poorly drained soils are also included. Also included are some areas of soils that are fine sandy loam in the surface layer and subsoil. Areas of included soils are as much as 3 acres and make up 15 to 25 percent of the map unit.

The seasonal high water table in this Scio soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil. The available water capacity is very high, and runoff is slow.

Most of the acreage is used as hayland or pasture. Some areas are used as woodland or are idle.

This soil is well suited to most crops grown in the survey area. It is among the best suited soils in the county for food and fiber production. In spring the seasonal high water table delays planting operations and limits plant growth. Subsurface drainage lowers the water table; however, in some areas suitable drainage outlets are difficult to locate. A conservation tillage system, incorporating crop residue into the soil, and tillage and harvesting at the proper moisture level will improve soil tilth and increase organic matter content.

This soil is well suited to pasture. Restricted grazing in early spring and during prolonged wet periods helps prevent surface compaction and destruction of the desirable pasture grasses. Rotation grazing, proper stocking rates, yearly mowing, and preventing overgrazing help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The erosion hazard, rate of seedling mortality, windthrow hazard, and equipment limitation are generally slight. Northern red oak, white ash, sugar maple, black cherry, eastern hemlock, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains with adequate outlets will lower the water table. Erosion is a hazard during construction. Excavations and cutbanks cave or slough easily.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads with coarse textured fill and installing surface and subsurface drainage will reduce the frost-action potential. Cutbanks cave or slough.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the seasonal high water table. Installing drainage around the field and intercepting runoff from the higher areas will reduce wetness.

This soil is in capability subclass IIw.

ScB—Scio silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It formed in water-deposited silt and very fine

sand and is on lake plains in the eastern part of the county. Areas of this soil are irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is 26 inches thick. The upper part is yellowish brown silt loam; the middle part is dark brown, mottled silt loam; and the lower part is yellowish brown, brown, and dark yellowish brown, mottled silt. The substratum extends to a depth of 65 inches or more. The upper part is brown and yellowish brown silt loam that has reddish brown varves of silty clay. The lower part is brown, yellowish brown, and light yellowish brown silt that has varves of reddish brown and pale brown silty clay about 21 inches thick.

Included with this soil in mapping are small areas of the poorly drained Raynham soils along drainageways and the well drained Unadilla soils in the higher areas on the landscape. A few areas of the moderately well drained Elmridge soils are included where fine sandy loam overlies silty clay. Areas of moderately well drained and somewhat poorly drained soils are also included. Also included are some areas of soils that are fine sandy loam in the surface layer and subsoil. Areas of included soils are as much as 3 acres and make up 15 to 20 percent of the map unit.

The seasonal high water table in this Scio soil is at a depth of 1½ to 2 feet from March to May. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil. The available water capacity is very high, and runoff is medium.

Most of the acreage is used as hayland or pasture. Some areas are used as woodland or are idle.

This soil is well suited to cultivated crops. The seasonal high water table in spring delays planting and limits growth of some crops. Subsurface drainage will lower the water table. A conservation tillage system along with contour farming or stripcropping help control erosion. Returning crop residue to the soil, regularly adding organic material, and tilling and harvesting at the proper moisture level will improve soil tilth and increase organic matter content.

This soil is well suited to pasture. Restricted grazing in early spring and during other prolonged wet periods helps prevent surface compaction and destruction of the desirable pasture grasses and helps control erosion. Rotation grazing, proper stocking rates, weed control, and preventing overgrazing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderately high. The erosion hazard, rate of seedling mortality, windthrow hazard, and equipment limitation are generally slight. Northern red oak, white ash, sugar maple, black cherry, eastern hemlock, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains with adequate outlets will lower the water table. Erosion is a hazard during construction. Excavations and cutbanks cave or slough easily.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads with coarse textured fill material and installing surface and subsurface drainage reduces the frost-action potential. Erosion is a hazard during construction. Cutbanks cave or slough.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the seasonal high water table. Installing drainage around the field and intercepting runoff from the higher areas will reduce wetness.

This soil is in capability subclass IIe.

Sh—Shaker fine sandy loam. This nearly level soil is very deep and somewhat poorly drained to poorly drained. It is in areas of glacial lacustrine deposits where sandy loam overlies clay and silt. Areas of this soil are irregularly shaped and range from 3 to 10 acres in size.

Typically, the surface layer is very dark grayish brown fine sandy loam about 11 inches thick. The subsoil extends to a depth of 31 inches. The upper part is grayish brown, mottled fine sandy loam about 8 inches thick. The middle part is dark brown, mottled sandy loam about 7 inches thick. The lower part is dark grayish brown, mottled very fine sandy loam about 5 inches thick. The substratum extends to a depth of 62 inches or more. It is reddish brown and yellowish brown, mottled, varved clay, silt, and very fine sandy loam.

Included with this soil in mapping are the moderately well drained Elmridge soils in the slightly higher positions on the landscape. Also included, where coarser textured material overlies the clay, are the somewhat poorly drained Cosad soils and the moderately well drained Claverack soils. Also included are small areas of soils that have layers of finer textured material in the subsoil than in the Shaker soil. Areas of included soils are as much as 3 acres and make up 15 to 25 percent of the map unit.

The seasonal high water table in this Shaker soil is at a depth of less than 1½ feet from November to May. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is high, and runoff is slow.

This soil is not in any intensive use. Most of the acreage is used as woodland, hayland, or pasture or is idle.

This soil is moderately suited to cultivated crops. In drained areas it ranks among the best suited soils in the county for food and fiber production. The seasonal high water table is the main limitation. A combination of surface and subsurface drains will lower the water table, reduce wetness, and allow more timely planting and harvesting operations. In some areas drainage outlets are difficult to locate. A conservation tillage system, incorporating crop residue into the soil, and tilling and harvesting at proper moisture levels will improve soil tilth and increase organic matter content.

This soil is moderately well suited to pasture. The seasonal high water table is a limitation. Overgrazing and grazing when the soil is wet cause surface compaction and loss of pasture seedings. Rotation grazing, proper stocking rates, yearly mowing, preventing overgrazing, and restricted grazing during dry periods in summer help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is high. The seasonal high water table causes a high rate of seedling mortality and a severe windthrow hazard. Wetness severely limits the use of heavy equipment. Water tolerant trees grow well on this soil. Eastern white pine, sugar maple, and red maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Properly designed and installed foundation drains with adequate outlets will lower the water table. The soil is better suited to dwellings without basements. In many areas of this soil suitable outlets for drainage systems are not available.

The main limitations of this soil for local roads and streets are the seasonal high water table, the frost-action potential, and the low strength of the soil. Constructing roads on raised fill of coarse textured material will overcome these limitations.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and the slow percolation in the subsoil and substratum. Installing drainage around the field and intercepting runoff from the higher areas will reduce wetness. Enlarging the field or the trenches below the distribution lines will improve percolation.

This soil is in capability subclass IIIw.

St—Stafford loamy fine sand. This nearly level soil is very deep and somewhat poorly drained. It is on deltas and in the lake plain, mainly in the eastern part of the county. Areas of this soil are irregularly shaped and range from 3 to 120 acres in size.

Typically, the surface layer is very dark grayish brown loamy fine sand about 12 inches thick. The mottled subsoil extends to a depth of 12 to 30 inches. The upper part is pale brown fine sand about 3 inches thick. The lower part is grayish brown loamy fine sand about 15 inches thick. The substratum is dark gray fine sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the poorly drained and very poorly drained Granby soils in depressions and along drainageways. Areas of the moderately well drained Elnora soils and a few small areas of the well drained or somewhat excessively drained Colonie soils are included in the higher areas on the landscape. Also included are areas of soils that have finer textures in the subsoil than the Stafford soil and areas of cut and fill material. Included areas are as much as 3 acres and make up 15 to 30 percent of the map unit.

The seasonal high water table in this Stafford soil is ½ foot to 1½ feet below the surface from January to May. Depth to bedrock is more than 60 inches. Permeability is moderately rapid to rapid throughout. The available water capacity is very low, and runoff is slow.

This soil is not in intensive use. Most of the acreage is used as hayland or woodland.

This soil is moderately suited to cultivated crops. The seasonal high water table can cause delays in farming operations and is the main management concern. Drainage systems, including open ditches and subsurface tile, help remove excess water. However, in some areas locating drainage outlets is difficult. A conservation tillage system, incorporating crop residue into the soil, and tilling and harvesting at proper moisture levels will improve soil tilth and increase organic matter content.

This soil is moderately well suited to pasture. Overgrazing can result in the loss of desirable pasture plants and cause surface compaction. Restricted grazing during wet periods helps prevent surface compaction and destruction of seedlings. Rotation grazing, yearly mowing to remove brush, proper stocking rates, and prevention of overgrazing help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. The seasonal high water table is a moderate limitation to use of planting and harvesting equipment. Windthrow is a moderate hazard because of the seasonal high water table. The seedling mortality rate is moderate because of the seasonal high water table and poor aeration. Planting seedlings in late spring and

summer will ensure survival. Red maple, eastern hemlock, and eastern white pine are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation and footing drains reduce wetness. Adequately sealing foundations and grading the land so that runoff is diverted from the site also reduce wetness. The soil is better suited to dwellings without basements.

The main limitation of this soil for local roads and streets is the seasonal high water table. Constructing roads on raised fill of coarse textured material will reduce wetness. Excavations and cutbanks in this soil are subject to sloughing and caving.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and a poor filtering capacity. The soil is a poor filter of effluent. Consequently, ground-water contamination is a hazard. A specially designed septic tank absorption field or an alternative system will properly filter the effluent.

This soil is in capability subclass IIIw.

SuA—Sudbury fine sandy loam, 0 to 3 percent slopes. This nearly level soil is very deep and moderately well drained. It is typically on high terraces above major streams. Areas of this soil are long and narrow to roughly oblong and range from 3 to 30 acres in size.

Typically, the surface layer is dark brown fine sandy loam about 11 inches thick. The subsoil is 18 inches thick. The upper part is yellowish brown fine sandy loam about 9 inches thick. The lower part is yellowish brown loamy sand about 9 inches thick. The substratum extends to a depth of 60 inches or more. The upper part is yellowish brown loamy sand. The lower part is brown sand and grayish brown silt loam.

Included with this soil in mapping are small areas of the well drained Riverhead soils. Also included are small areas of the sandier Elnora and Colonie soils and the silty Scio and Unadilla soils. Also included are areas of soils that have silty clay within a depth of 40 inches. Included areas are as much as 3 acres in size and make up 15 percent of the map unit.

The seasonal high water table in this Sudbury soil is at a depth of 1½ to 3 feet from December to April. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the surface layer and the upper part of the subsoil and moderate to rapid below. The available water capacity is very low, and runoff is medium.

Most of the acreage is used for cultivated crops. Some areas are used for orchards, pasture, or woodland.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. In some years the seasonal high water table will delay planting in early spring. Subsurface drains will lower the water table. Crops on this soil respond readily to applications of lime and fertilizer. A conservation tillage system, cover crops, and returning crop residue to the soil will improve soil tilth and increase the water-holding capacity of the soil.

This soil is well suited to pasture. The seasonal high water table in spring and during prolonged rainy periods is a limitation. Restricted grazing when the soil is wet helps prevent surface compaction. Rotation grazing, proper stocking rates, weed control, and applications of lime and fertilizer help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is high. Limitations to woodland use and management are slight. Eastern white pine, northern red oak, black cherry, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites will divert runoff and seepage and reduce wetness. Adequately sealing the foundation and grading to remove runoff will also reduce wetness. Cutbanks in excavated areas are subject to sloughing and caving.

The main limitations of this soil for local roads and streets are the seasonal high water table and the frost-action potential. Constructing roads on raised fill with coarse textured subgrade or base material will reduce wetness and the frost-action potential. In excavated areas cutbanks are subject to caving and sloughing.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and a poor filtering capacity. The soil is a poor filter of effluent. Consequently, ground-water contamination is a hazard. However, a specially designed septic tank absorption field or an alternative system will properly filter the effluent. Other nearby soils are better suited to this use.

This soil is in capability subclass IIw.

SuB—Sudbury fine sandy loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on high terraces above major streams. Individual areas are long and narrow to roughly oblong and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown fine sandy

loam about 11 inches thick. The subsoil is 18 inches thick. The upper part is yellowish brown fine sandy loam about 9 inches thick. The lower part is yellowish brown loamy sand about 9 inches thick. The substratum extends to a depth of 60 inches or more. The upper part is yellowish brown loamy sand. The lower part is brown sand and grayish brown silt loam.

Included with this soil in mapping are areas of the moderately well drained Scio and Elmwood soils, the well drained to somewhat excessively drained Colonie soils, and the somewhat poorly drained Shaker and Raynham soils. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Sudbury soil is at a depth of 1½ to 3 feet from December to April. Depth to bedrock is more than 60 inches. Permeability is moderately rapid in the surface layer and the upper part of the subsoil and moderate to rapid below. The available water capacity is moderate, and runoff is medium.

Most of the acreage is used for cultivated crops. Some areas are used for orchards, pasture, or woodland.

This soil is well suited to most cultivated crops grown in the area. It is among the best suited soils in the county for food and fiber production. In some years the seasonal high water table will delay planting in early spring. Subsurface drains will lower the water table. Crops on this soil respond readily to lime and fertilizer. A conservation tillage system, cover crops, and returning crop residue to the soil will improve soil tilth and increase the water-holding capacity of the soil.

This soil is well suited to pasture. The seasonal high water table in spring and during prolonged rainy periods is a limitation. Restricted grazing when the soil is wet helps prevent surface compaction. Rotation grazing, proper stocking rates, weed control, and applications of lime and fertilizer help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is high. Limitations to woodland use and management are slight. Eastern white pine, northern red oak, black cherry, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Foundation drains and interceptor drains upslope from construction sites will divert runoff and seepage and reduce wetness. Adequately sealing the foundation and grading to remove runoff will also reduce wetness. In excavated areas cutbanks are subject to sloughing and caving.

The main limitations of this soil on sites for local roads and streets are the seasonal high water table and the frost-action potential. Constructing roads on raised fill with coarse textured subgrade will reduce wetness and the frost-action potential. In excavated areas cutbanks are subject to caving and sloughing.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and poor filter. The soil is a poor filter of effluent. Consequently, ground-water contamination is a hazard. However, a specially designed septic tank absorption field or other alternative system will properly filter effluent.

This soil is in capability subclass IIw.

Te—Teel silt loam. This nearly level soil is very deep and moderately well drained. It is on flood plains along major streams. Areas of this soil are long and narrow and range from 3 to 100 acres in size.

Typically the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsoil extends to a depth of about 29 inches. The upper part is dark grayish brown silt loam 12 inches thick. The lower part is grayish brown silt loam 9 inches thick. The upper part of the substratum is grayish brown, mottled silt loam. The lower part to a depth of 60 inches is dark grayish brown, mottled fine sandy loam.

Included with this soil in mapping are small areas of the well drained Hamlin soils, the somewhat poorly drained Wakeland soils, and the poorly drained and very poorly drained Wayland soils. Also included, along Normanskill Creek, are areas of Teel soils that have been stripped of the surface layer as a source of topsoil. Other areas are included where fill material has been placed on top of the soil. Also included, in higher areas, are small areas of the somewhat poorly drained Raynham and Rhinebeck soils and the moderately well drained Scio soils. Included areas are as much as 3 acres and make up 15 to 25 percent of the map unit.

The seasonal high water table in this Teel soil is at a depth of 1½ to 2 feet from February to April. The soil is subject to occasional flooding for brief periods from November to May. Depth to bedrock is more than 60 inches. Permeability is moderate. Surface runoff is slow. The available water capacity is high.

Most areas of this soil are used for cultivated crops or pasture.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. This soil is normally not subject to flooding during the growing season. In some years, however, flooding delays planting. In some years the seasonal high water table also delays planting. Placing random subsurface drains in depressions will lower the water

table. A conservation tillage system and regular additions of organic material to the soil will help maintain or improve soil tilth.

This soil is also well suited to pasture. Overgrazing during wet periods will cause surface compaction and reduce the quality of forage. Weed control, pasture rotation, proper stocking rates, and timely deferment of grazing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Streambank erosion is a problem in some areas. In some years the seasonal high water table makes the surface soft for brief periods in early spring and hinders the use of planting and harvesting equipment. Red maple, eastern white pine, white ash, and sugar maple are common on the soil.

The main limitations of this soil on sites for dwellings with basements are flooding and the seasonal high water table. Raynham and other soils in a nearby higher landscape position are better suited to this use.

The main limitations of this soil for local roads and streets are flooding and the frost-action potential. Constructing roads on coarse textured fill material will reduce flood damage and frost heave. Laying out roads around the flood plain will reduce construction costs and loss of valuable cropland.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are flooding and the seasonal high water table. Flooding from adjacent streams can cause gouging of the distribution lines. Flooding and the seasonal high water table will also cause most systems to malfunction. Soils that are not subject to flooding are better suited to this use.

This soil is in capability subclass IIw.

To—Tioga silt loam. This nearly level soil is very deep and well drained. It is on flood plains along large streams. Areas of this soil are long and narrow and range from 3 to 25 acres is size.

Typically, the surface layer is dark brown silt loam about 11 inches thick. The subsoil is dark yellowish brown and brown gravelly sandy loam and gravelly fine sandy loam and is 23 inches thick. The substratum is light olive brown and olive brown very gravelly loam and very gravelly loamy fine sand to a depth of 65 inches or more.

Included with this soil in mapping, in small depressions, are the somewhat poorly drained Middlebury soils. Also included are areas of the poorly drained and very poorly drained Wayland soils, Fluvaquents, and Udifluvents in depressional oxbows and along small drainageways that cross areas of this soil. Also included are areas of soils that have a gravelly surface layer. Included areas are as much as 3 acres and make up 20 percent of the map unit.

The seasonal high water table in this Tioga soil is at a depth of 3 to 6 feet from February to April. The soil is subject to occasional flooding for brief periods from November to May. Depth to bedrock is more than 60 inches. Permeability is moderate or moderately rapid in the surface layer and substratum. The available water capacity is high and surface runoff is slow.

Most of the acreage is used for cultivated crops or brushland.

This soil is very well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. The naturally high fertility and high water-holding capacity make this soil highly productive. Although the soil is subject to flooding in spring, the floodwaters will recede within 2 to 7 days. The flooding generally does not injure perennial crops. Cover crops or sod crops in the cropping system and a conservation tillage system help control erosion during flooding and improve tilth.

This soil is well suited to pasture. Restricted grazing during wet periods, rotation grazing, and proper stocking rates help keep the pasture and soil in good condition.

The potential productivity of this soil for northern red oak is moderately high. Northern red oak, yellow poplar, and sugar maple are common on the soil.

The main limitation of this soil on sites for dwellings with basements is flooding. Soils on nearby higher landscapes are better suited to this use.

The main limitations of this soil for local roads and streets are flooding and the frost-action potential. Constructing roads on coarse textured fill material will reduce flood damage and frost action.

The main limitations affecting the use of this soil as a site for septic tank absorbtion fields are flooding, the seasonal high water table, and a poor filtering capacity. Other soils that are not subject to flooding are better suited to this use.

This soil is in capability subclass I.

TuB—Tuller-Greene complex, 0 to 8 percent slopes. This map unit consists of nearly level to gently sloping soils. The Tuller soil is shallow and somewhat poorly drained or poorly drained. The Greene soil is moderately deep and somewhat poorly drained. These soils are in flat and slightly sloping areas on bedrock-controlled plateaus and on long narrow strips between bedrock escarpments. The unit is about 45 percent Tuller soils, 30 percent Greene soils, and 25 percent other soils. The Tuller and Greene soils are so intermingled that separating them in mapping was not practical. Areas of this soil are both broad and narrow and range from less than 5 acres to more than 25 acres in size.

Typically, the surface layer of the Tuller soil is dark grayish brown channery silt loam about 8 inches thick. The subsoil is olive, mottled channery silt loam about 8 inches thick. Interbedded dark gray sandstone and siltstone are at a depth of 16 inches.

Typically, the surface layer of the Greene soil is very dark grayish brown channery silt loam about 8 inches thick. The subsoil extends to a depth of 24 inches. The upper part is yellowish brown, mottled channery loam. The lower part is olive brown channery silt loam. Fractured gray fine grained sandstone and shale are at a depth of 24 inches.

Included with this unit in mapping, near sharp breaks and on slight rises, are small areas of the shallow, somewhat excessively drained to moderately well drained Arnot soils. Also included are small areas of the somewhat poorly drained Angola soils. Included areas are as much as 3 acres and make up about 25 percent of the map unit.

The Tuller soil has a seasonal high water table at a depth of ½ to 1 foot from December to June. The water table is perched above bedrock. Depth to bedrock limits the rooting depth to 10 to 20 inches. Permeability is moderate in the surface layer and moderately slow or slow in the subsoil. Available water capacity is very low, and runoff is medium or rapid.

The Greene soil has a seasonal high water table at a depth of ½ to 1 foot from December to June. The water table is perched above bedrock. Depth to bedrock limits the rooting depth to 20 to 40 inches. Permeability is moderate in the surface layer and slow in the subsoil and substratum. Available water capacity is low, and runoff is medium.

Most of the acreage is used as woodland or brushland.

These soils are poorly suited to cultivated crops because of the seasonal high water table and, on the Tuller soil, shallowness over bedrock. Diversions placed around the perimeter of the soils will intercept runoff from higher areas and reduce wetness. Also, shallow surface drains placed in the Greene soil will lower the water table. Returning crop residue and regularly adding organic matter will increase available soil moisture during dry periods.

These soils are moderately suited to pasture. Restricted grazing during wet periods, rotation grazing, proper stocking rates, and weed control help keep the pasture and soil in good condition.

The potential productivity of these soils for red maple is moderate. The seasonal high water table and the softness of the soil cause a high rate of seedling mortality and a severe limitation to equipment use. Windthrow hazard is severe because of the shallow root zone. Red maple, American beech, yellow birch, American elm, and northern white cedar are common on the soil.

The main limitations of these soils on sites for dwellings with basements are the shallow depth to bedrock and the seasonal high water table. Areas of the Greene soil and the deeper included soils are better suited to this use. Building above bedrock in these areas and landscaping with additional fill will help overcome the depth to bedrock. Installing foundation drains and adequately sealing foundations will prevent wet basements. Grading the land to divert runoff will also reduce wetness.

The main limitations for local roads and streets are the seasonal high water table, the depth to bedrock, and the frost-action potential. Constructing local roads and streets on raised fill composed of coarse textured base material will reduce wetness and the frost-action potential. Carefully planning roads and grades will avoid removal of rock.

The main limitations affecting the use of these soils as sites for septic tank absorption fields are the seasonal high water table, the depth to bedrock, and the slow permeability. However, the deeper included soils are suited to this use. Installing drainage around the absorption field and intercepting runoff from the higher areas will reduce wetness. Enlarging the absorption field or the trenches below the distribution lines will improve percolation. Adding suitable fill will help prevent ground-water contamination.

This soil is in capability subclass IVw.

Ud—Udipsamments, smoothed. This map unit consists of nearly level to very steep areas of disturbed, sandy soils. Areas of these soils are long and narrow to rectangular in shape and range from 5 to 250 acres. Slopes range from 0 to 45 percent. These soils are moderately well drained to somewhat excessively drained.

In a typical area these soils consist of about 40 percent cuts of mostly brown or yellowish brown loamy fine sand and sand or Colonie or Elnora soils; 30 percent fills of mixed sandy material moved from the upper part of Colonie or Elnora soils; about 10 percent Urban land; and 20 percent other soils.

Typically, the surface layer is brown loamy sand or sand and may contain as much as 10 percent gravel. Below that are layers of brown and yellowish brown loamy fine sand or fine sand to a depth of 60 inches or more. These layers contain as much as 10 percent gravel.

Included with these soils in mapping are small areas of undisturbed Colonie or Elnora soils. Colonie soils are very deep and somewhat excessively drained to well drained. Elnora soils are very deep and moderately well

drained. Also included are areas of soils that have finer textures than the Udipsamments and that are indicated by special spot symbols on the soil map. Included areas are less than 3 acres and make up about 20 percent of the map unit.

Most of the acreage is used for athletic fields, sand and borrow pits, or large fill and graded areas or is idle.

The seasonal high water table in Udipsamments is generally at a depth of more than 6 feet but in some areas is at a depth of 4 feet. Depth to bedrock is more than 6 feet. Rooting depth ranges to 80 inches but in most areas is in the upper 24 inches. Permeability is moderately rapid or rapid where the soils are relatively undisturbed and uncompacted. The available water capacity is low or very low, and runoff is slow or medium. On included areas of Urban land, runoff is rapid because of little or no infiltration. Rock fragments are few, except in areas of glacial till or outwash. The surface layer ranges from strongly acid to slightly acid.

Areas that do not have buildings vary widely in potential and characteristics for urban and other uses. If irrigation is used, nearly level and gently sloping areas are suitable for lawns, landscaping, and gardens. These soils are so variable that onsite investigation is needed to determine potential and limitations for any proposed use.

A capability subclass has not been assigned.

Ue—Udipsamments, dredged. This map unit consists of very deep, nearly level to rolling areas of moderately well drained to somewhat excessively drained sand or sand and gravel. It consists of soil material that has been pumped from the Hudson River. The soil material is similar to Tioga, Colonie, and Riverhead soils. Areas of these soils are roughly rectangular and range from 10 to 40 acres. Slopes range from 0 to 8 percent.

Typically, sandy material 10 or more feet thick covers the original soil onto which the dredgings are pumped. The surface layer is brown loamy sand and sand and as much as 35 percent gravel. It ranges from strongly acid to slightly acid. The layers below the surface consist of brownish yellow and dark brown loamy sand, sand, or fine sand and as much as 35 percent gravel.

Included with these soils in mapping are areas of the very deep, poorly drained silty dredged material that is very poorly drained to somewhat poorly drained and less permeable than the Udipsamments. Also included, adjacent to the dredged areas, are areas of the moderately well drained Teel soils and the well drained Hamlin and Tioga soils. Included areas are as much as 3 acres and make up 10 to 25 percent of the map unit.

Most of the acreage is a source of fill material.

Udipsamments, dredged, are highly variable in composition. Soil properties, such as permeability, available water capacity, and soil reaction, vary from area to area.

The suitability of Udipsamments, dredged, for rural and urban uses varies from poor to good. Onsite investigation is needed for each individual site for any proposed use.

A capability subclass is not assigned.

Uf—Udipsamments-Urban land complex. This map unit consists of nearly level to gently sloping, very deep, well drained to somewhat excessively drained cuts and fills in sandy soils and areas of Urban land. Areas of this complex are roughly rectangular in shape and range from 5 to 100 acres. A typical area of this complex is about 50 percent Udipsamments, 30 percent Urban land, and 20 percent other soils. Udipsamments are generally soils that have been disturbed as a result of manmade cuts or fills. Urban land is mostly covered by asphalt, concrete, buildings, or other impervious surfaces. Udipsamments and Urban land are in such intricate patterns that separating them in mapping was not practical. Slopes range from 0 to 8 percent.

Typically, the surface layer of Udipsamments is brown loamy fine sand or fine sand and as much as 10 percent gravel. Below that are layers, to a depth of 60 inches or more, of brown and yellowish brown loamy fine sand or fine sand that is as much as 10 percent gravel.

Included with this unit in mapping are areas of the moderately well drained and somewhat poorly drained Udipsamments. Also included are poorly drained Psammaquents, which are indicated by wet spot symbols on the soil map. Small areas of fine textured soils are also included and are shown on the soil map by a conventional symbol. Included soils range from ¼ acre to 2 acres in size and make up about 20 percent of the map unit.

The seasonal high water table in Udipsamments is generally at a depth of more than 6 feet but in some areas is at a depth of 4 feet. Depth to bedrock is more than 6 feet. Rooting depth ranges to 80 inches but in most areas is in the upper 24 inches. Permeability is moderately rapid or rapid where the soils are relatively undisturbed and uncompacted. The available water capacity is low or very low, and runoff is slow or medium. On included areas of Urban land, runoff is rapid because of little or no infiltration. Rock fragments are few or lacking, except in areas of glacial till or outwash. The surface layer ranges from strongly acid to slightly acid.

Udipsamments and Urban land are extensive in the

town of Colonie, which has undergone rapid urban expansion in the past few years. Udipsamments are suitable for most building uses. In some places, excavations deeper than 48 inches reach finer textured materials or the seasonal high water table. If the soils are exposed, soil blowing is a hazard. Steep cuts should be avoided because cutbanks tend to cave or slump. Areas of these soils are difficult to stabilize because of droughtiness, and irrigation will help establish vegetative cover.

Udipsamments are poorly suited to use for lawns and gardens. The loamy fine sand surface texture and tendency to droughtiness are limitations. Adding organic matter, fertilizer, lime, and mulch will increase fertility and conserve moisture. Drought-tolerant plants for landscaping grow well on these soils. Onsite investigation is needed to determine the potential or limitations of these soils for any proposed land use.

A capability subclass has not been assigned.

Ug—Udorthents, loamy. This map unit consists of very deep, level to gently sloping areas of well drained and moderately well drained, loamy soil material that resulted from manmade cuts and fills in loamy upland soils. Areas of these soils are roughly rectangular and range from 3 to 25 acres. Slopes range from 0 to 8 percent.

Typically, the surface layer is dark brown silt loam about 5 inches thick. Below that are layers, to a depth of 60 inches or more, of brown and yellowish brown silt loam and loam that contains as much as 40 percent rock fragments.

Included with these soils in mapping are areas filled with rock fragments and deeply buried rubbish. In a few areas the fill consists of such materials as construction waste, cinders, coal ashes, and solid wastes. Also included are small areas of soils and freshwater marsh that are not covered with fill material. Included areas are as much as 3 acres and make up about 10 percent of the map unit.

These soils are highly variable in composition. Soil properties, such as permeability, available water capacity, and soil reaction, vary from area to area. The properties of adjacent map units commonly provide clues to the soil properties of these soils.

These soils vary from poorly suited to well suited to use for cuts or fills for farming and for urban uses. Onsite investigation is needed on each individual site for any proposed use.

A capability subclass has not been assigned.

Uh—Udorthents, clayey-Urban land complex. This map unit consists of very deep, level to gently sloping areas of well drained and moderately well drained clayey soil material and areas of Urban land. Udorthents have been disturbed and were originally Hudson, Rhinebeck, and Scio soils. Areas of this complex are roughly rectangular and range from 3 to 80 acres. This complex is about 40 percent Udorthents, clayey; 30 percent Urban land; and 30 percent other soils. Urban land is mostly covered by concrete, asphalt, buildings, or other impervious surfaces. Other soils include both disturbed loamy and undisturbed clayey soils. The clayey soil material and Urban land are in such an intricate pattern that separating them in mapping was not feasible. Slopes range from 0 to 8 percent.

Typically, Udorthents, clayey, have a surface layer of dark brown silt loam about 5 inches thick. Below that are layers of brown and olive brown silty clay loam and silty clay that have few or no rock fragments.

Udorthents, clayey, vary greatly in composition. Soil properties, such as permeability, available water capacity, and soil reaction, vary from area to area. The properties of adjacent map units commonly provide clues to the soil properties of these soils.

These soils are poorly suited to well suited to use for cuts or fills for farming and for urban uses. Onsite investigation is needed on each individual site for any proposed use.

A capability subclass has not been assigned.

Uk—Udorthents, loamy-Urban land complex. This map unit consists of very deep, level to gently sloping areas of well drained and moderately well drained loamy soil material and areas of Urban land. Udorthents have been disturbed and were originally Nunda, Valois, and Riverhead soils. This complex is about 40 percent Udorthents, loamy; 30 percent Urban land; and 30 percent other soils. Urban land is mostly covered by concrete, asphalt, buildings, or other impervious surfaces. Other soils include both disturbed and undisturbed loamy soils. Udorthents, loamy, and areas of Urban land are in such an intricate pattern that separating them in mapping was not feasible. Areas of this complex are roughly rectangular and range from 3 to 80 acres. Slopes range from 0 to 8 percent.

Typically, Udorthents, loamy, have a surface layer of dark brown silt loam about 5 inches thick. Below that are layers, to a depth of 60 inches or more, of brown and yellowish brown silt loam and loam that is as much as 40 percent rock fragments.

Udorthents, loamy, are highly variable in composition. Soil properties, such as permeability, available water capacity, and soil reaction, vary from area to area. The properties of adjacent map units commonly provide

clues to the soil properties of these soils.

These soils are poorly suited to well suited to use for cuts or fills for farming and for urban uses. Onsite investigation is needed on each individual site for any proposed use.

A capability subclass has not been assigned.

UnA—Unadilla silt loam, 0 to 3 percent slopes. This nearly level soil is very deep and well drained. It is on flat terraces on the lake plain. Areas of this soil are long and narrow to broad and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is 15 inches thick. It is dark yellowish brown silt loam in the upper part and yellowish brown very fine sandy loam in the lower part. The substratum is dark yellowish brown very fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Scio soils and the poorly drained Raynham soils in slight depressions or along drainageways. Also included are areas of soils that are similar to the Unadilla soil but have stratified sand and gravel closer to the surface. Areas of included soils are less than 3 acres and make up 15 to 25 percent of the map unit.

The seasonal high water table is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate throughout. The available water capacity is high, and runoff is slow.

Most of the acreage is used as cropland.

This soil is very well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. It is easy to till and can be cultivated intensively if well managed. Cover crops and a conservation tillage system help control erosion, increase organic matter content, and improve soil tilth.

This soil is well suited to pasture. Restricted grazing when the soil is wet helps prevent surface compaction and destruction of pasture plants. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, eastern white pine, and white ash are common on the soil.

This soil has no limitations on sites for dwellings with basements.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on raised fill composed of coarse textured base material will reduce the frost-action potential.

There are no limitations affecting the use of this soil as a site for septic tank absorption fields.

This soil is in capability subclass I.

UnB—Unadilla silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and well drained. It is on flat terraces on the lake plain. Areas of this soil are long and narrow to broad and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is 15 inches thick. It is dark yellowish brown silt loam in the upper part and yellowish brown very fine sandy loam in the lower part. The substratum is dark yellowish brown very fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Scio soils and the poorly drained Raynham soils in slight depressions or along drainageways. Also included are areas of soils that are similar to the Unadilla soil but have stratified sand and gravel closer to the surface. Areas of included soils are less than 3 acres and make up 15 to 20 percent of the map unit.

The seasonal high water table in this Unadilla soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate. The available water capacity is high, and runoff is slow.

Most of the acreage is used as cropland.

This soil is well suited to cultivated crops. It is easy to till and can be cultivated intensively if well managed. Erosion is a hazard. A conservation tillage system and contour farming or stripcropping help control erosion. Growing cover crops and regularly adding organic material to the soil improve organic matter content and soil tilth.

This soil is well suited to pasture. Restricted grazing when the soil is wet helps prevent surface compaction and destruction of pasture plants. Proper stocking rates, rotation grazing, and yearly mowing help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, eastern white pine, and white ash are common on the soil.

This soil has no limitations on sites for dwellings with basements.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on raised fill composed of coarse textured base material will reduce the frost-action potential.

There are no limitations affecting the use of this soil as a site for septic tank absorption fields.

This soil is in capability subclass IIe.

UnC—Unadilla silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and well drained. It is on flat terraces on the lake plain. Areas of this soil are long and narrow to broad and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is 15 inches thick. It is dark yellowish brown silt loam in the upper part and yellowish brown very fine sandy loam in the lower part. The substratum is dark yellowish brown very fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping, in slight depressions or along drainageways, are small areas of the moderately well drained Hudson soils and the poorly drained Raynham soils. Also included are areas of Riverhead soils, which have stratified sand and gravel at a depth of 40 inches. Included areas are less than 3 acres in size and make up 15 percent of the map unit.

The seasonal high water table in this Unadilla soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate. The available water capacity is high, and runoff is slow.

Most of the acreage is used as cropland.

This soil is moderately suited to cultivated crops. It is easy to till and can be cultivated intensively if well managed. Erosion is a moderate hazard. A conservation tillage system and contour farming or stripcropping and terraces help control erosion. Growing cover crops and regularly adding organic material to the soil improve organic matter content and increase soil tilth.

This soil is moderately well suited to pasture. Erosion is a hazard on long slopes, especially if overgrazed. Restricted grazing when the soil is wet helps prevent surface compaction and destruction of pasture plants. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, eastern white pine, and white ash are common on the soil. The erosion hazard is moderate.

The main limitation of this soil on sites for dwellings with basements is the slope. Constructing dwellings to conform to the natural lay of the land or grading helps overcome the slope limitation. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site, diverting runoff from the higher areas, and timely revegetating following construction help control erosion.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on raised fill composed of coarse textured base material will reduce the frost-action potential.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the slope. Laying out distribution lines on the contour and using distribution boxes or other structures will ensure even distribution of effluent and enable the system to function more effectively.

This soil is in capability subclass IIIe.

UnD—Unadilla silt loam, 15 to 25 percent slopes. This moderately steep soil is very deep and well drained. It is on the side slopes of silty lacustrine deltas and terraces on the lake plain. Areas of this soil are dendritic in shape and range from 10 to 60 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is 15 inches thick. It is dark yellowish brown silt loam in the upper part and yellowish brown very fine sandy loam in the lower part. The substratum is dark yellowish brown very fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of the moderately well drained Hudson soils on clayey side slopes. Small areas of the well drained to somewhat excessively drained Colonie and Riverhead soils are included on the deeper, sandier parts of the landform. Included areas are less than 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Unadilla soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate. The available water capacity is high, and runoff is rapid.

Most of the acreage is used as pasture or woodland. Some areas are idle.

This soil is poorly suited to cultivated crops because of the slope and the severe erosion hazard. A conservation tillage system and stripcropping and terraces or a crop rotation that has several years of close-growing crops help control erosion. Returning crop residue to the soil and regularly adding organic material help maintain soil tilth.

This soil is poorly suited to pasture because of the slope and the severe erosion hazard. Preventing overgrazing will destroy desirable pasture plants and increase erosion. Preventing overgrazing is the main management concern. Rotation grazing, proper stocking rates, restricted grazing when the soil is wet, and yearly mowing will help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Northern red oak, eastern white pine, and white ash are common on the soil. Erosion is a severe hazard, particularly on long slopes and in disturbed areas. Laying out access roads and logging trails on the contour and using other water control practices help control erosion. The equipment limitation is moderate because of the slope.

The main limitation of this soil on sites for dwellings with basements is the slope. Excavations and cutbanks are subject to caving. The erosion hazard is severe in excavated sites. Grading and cutting and filling to form benches help overcome the slope limitation. Maintaining

the vegetative cover adjacent to the site, diverting runoff, and timely revegetating following construction help control erosion.

The main limitation of this soil for local roads and streets is the frost-action potential. Building roads on or near the contour on raised fill or coarse textured material will provide drainage away from the roadway.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the slope. Laying out distribution lines on the contour and using drop boxes or other structures will ensure even distribution of effluent and enable the system to function more effectively.

This soil is in capability subclass IVe.

Ur—Urban land. This map unit consists of nearly level to strongly sloping areas where asphalt, concrete, buildings, or other impervious materials cover more than 85 percent of the surface. Slopes range from 0 to 15 percent. Areas of this unit are roughly rectangular and range from 3 to more than 500 acres.

Typically, in an area of this unit 85 percent or more of the surface consists of parking lots, shopping centers, industrial parks, and urban business centers. In many areas the soils have been disturbed, and the examination and identification of these areas are impractical. Undisturbed areas make up less than 15 percent of the unit.

Included with this unit in mapping are small areas of mostly miscellaneous fill, similar in content to present-day dumps. In areas several feet of this fill have been placed over streams, swamps, and flood plains. These areas are now almost totally covered with roads, buildings, and other impervious material. Also included are small areas that are strongly sloping or steep. Included areas are as much as 3 acres in size and make up about 15 percent of the unit.

This unit has very few areas of soil material. Building activities have disturbed those areas which are used mainly for lawns or landscaping. Onsite investigation is needed to determine the potential and capabilities of any areas of soil material for any specific purpose.

A capability subclass has not been assigned.

Us—Urban land-Udipsamments complex. This map unit consists of nearly level to gently sloping areas of Urban land and very deep, moderately well drained to somewhat excessively drained Udipsamments. Areas of this complex are generally rectangular and range from 5 to more than 200 acres. Areas of this complex are about 50 percent Urban land, 30 percent Udipsamments, and 20 percent other soils. Urban land is mostly covered by asphalt, concrete, buildings, or other impervious materials. Udipsamments are sandy soils that have been disturbed by grading or filling during construction. Urban land and Udipsamments are in such an intricate pattern that separating them in mapping was not feasible. Slopes range from 0 to 8 percent.

Typically, the surface layer of Udipsamments is brown loamy fine sand or fine sand that is as much as 10 percent gravel. Below the surface layer to a depth of 60 or more inches are layers of brown and yellowish brown loamy fine sand or fine sand that is as much as 10 percent gravel.

Included with this unit in mapping are areas of moderately well drained and somewhat poorly drained sandy soils. Also included are somewhat poorly drained soils, which are indicated by wet spot symbols on the soil map. Small areas of soils that are finer textured than Udipsamments are also included and are shown on the soil map by a conventional symbol. Included soils range from ¼ acre to 2 acres in size and make up about 20 percent of the map unit.

The seasonal high water table in Udipsamments is generally at a depth of more than 6 feet but in some areas is at a depth of 4 feet. Depth to bedrock is more than 6 feet. Rooting depth ranges to 80 inches, but most roots are in the upper 24 inches. Permeability is moderately rapid to rapid where the soils are relatively undisturbed and uncompacted. The available water capacity is low or very low, and runoff is slow or medium. On Urban land runoff is rapid because of little or no infiltration. Few rocks are in Udipsamments, except in areas associated with glacial till or outwash. The surface layer ranges from strongly acid to slightly acid.

Udipsamments have few limitations for most urban uses, but they are large enough for further construction in only a few areas. In places cuts or excavations more than 4 feet deep reach finer textured materials or the seasonal high water table. In exposed areas soil blowing is a hazard. Onsite investigation is needed to determine the potential or limitations of these soils for any proposed land use.

A capability subclass has not been assigned.

Ut—Urban land-Udorthents complex. This map unit consists of nearly level and gently sloping areas of Urban land and areas of clayey and loamy Udorthents. Areas of this complex are irregularly shaped or oval and range from 5 to 150 acres. Areas of this complex are about 50 percent Urban land, 30 percent Udorthents, and 20 percent other soils. Udorthents are mostly covered by concrete, asphalt, buildings, or other impervious materials. The Urban land and Udorthents in

this map unit are so intermingled that separating them in mapping was not practical. Slopes range from 0 to 8 percent.

Typically, the surface layer of Udorthents is dark brown silt loam about 5 inches thick. The layers below the surface to a depth of 60 inches or more are brown and yellowish brown silt loam to silty clay that contains as much as 40 percent rock fragments.

Included with this unit in mapping are areas where the soil material is mixed with wood and coal ashes, cinders, and old rubbish heaps. Also included are small areas of soils that have slopes of more than 8 percent. These soils are mostly cuts and fills. The filled areas are over natural areas of soils, commonly graded-over low spots or wet soils. In some areas this fill material is shaly or gravelly. Included areas range to 3 acres and make up about 15 percent of the map unit.

The natural drainage, permeability, available water capacity, and runoff vary with the soil material. Urban land runoff is rapid.

Most areas of this unit are artificially drained with sewer systems, gutters, drainage tiles, and ditches. In places pavement and buildings completely cover small streams that run underground. The few areas that are not Urban land are in narrow bands between streets and sidewalks, backyards of row houses, small traffic circles, parks, and ballparks. Some areas of fill material have considerable amounts of fine pieces of brick, pottery, and coal ashes. Even so, these areas may be suitable for home gardens. Peppers, tomatoes, cabbage, and greens grow especially well in these areas. Few building sites are available, unless old buildings are razed. Because of the limited open space, potential is poor for use as recreation areas. Onsite investigation is needed to properly evaluate and plan the development of sites for a specific purpose.

A capability subclass has not been assigned.

VaB—Valois gravelly loam, 3 to 8 percent slopes. This gently sloping soil is very deep and well drained. It is on low-lying, gently rolling till plains. Areas of this soil are rectangular or oval in shape and range from 5 to 35 acres.

Typically, the surface layer is dark brown gravelly loam about 8 inches thick. The subsoil extends to a depth of 46 inches. The upper part is yellowish brown gravelly loam about 18 inches thick. The middle part is dark yellowish brown gravelly loam about 4 inches thick. The lower part is dark grayish brown gravelly loam about 16 inches thick. The substratum is dark grayish brown very gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Valois and Nunda soils that are less sloping. Areas of the well drained to somewhat excessively drained Chenango soils that are more than 35 percent gravel in the subsoil are also included. In small areas this Valois soil has a very gravelly to stony surface layer. Included areas are as much as 3 acres and make up 20 to 25 percent of the map unit.

The seasonal high water table in this Valois soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil and moderate to moderately rapid in the substratum. The available water capacity is moderate, and runoff is medium.

Most areas of this soil are used for crops or orchards. Many areas are in urban use.

This soil is well suited to cultivated crops. It is among the best suited soils in the county for food and fiber production. Rock fragments are a slight limitation to cultivation. Erosion is a slight hazard. Crops respond well to lime and fertilizer. A conservation tillage system or contour farming helps control erosion. Cover crops and returning crop residue to the soil help maintain organic mater content, improve soil tilth, and increase water-holding capacity.

This soil is well suited to pasture. In some years droughtiness in midsummer limits growth. Proper stocking rates, rotation grazing, applications of lime and fertilizer, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, white ash, American basswood, and American beech are commonly on the soil.

This soil has no limitations on sites for dwellings with basements.

The main limitation of this soil for local roads and streets is the frost-action potential. Constructing roads on coarse textured, raised fill material will reduce the frost-action potential.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is slow percolation. Enlarging the absorption field or the trenches below the distribution lines will improve percolation.

This soil is in capability subclass IIe.

VaC—Valois gravelly loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and well drained. It is on the higher, complex slopes characteristic of end or lateral moraines. Areas of this soil are long and narrow or oval in shape and range from 5 to 40 acres in size.

Typically, the surface layer is dark brown gravelly loam about 8 inches thick. The subsoil extends to a depth of 46 inches. The upper part is yellowish brown gravelly loam about 18 inches thick. The middle part is

dark yellowish brown gravelly loam about 4 inches thick. The lower part is dark grayish brown gravelly loam about 16 inches thick. The substratum is dark grayish brown very gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Valois soils that are on gentler slopes or on short, steeper slopes. Also included are areas of the moderately well drained Nunda soils and the more gravelly, well drained to somewhat excessively drained Chenango soils. Conventional and special symbols show included stony spots on the soil map. Included areas are as much as 3 acres and make up 15 to 20 percent of the map unit.

The seasonal high water table in this Valois soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil and moderate or moderately rapid in the substratum. The available water capacity is moderate, and runoff is moderately rapid.

Most of the acreage is used for cropland, orchards, or woodland.

This soil is moderately suited to cultivated crops. Erosion is a moderate hazard. In some years the soil is droughty during dry periods in summer. In some areas rock fragments limit some conservation practices. A conservation tillage system and contour farming along with stripcropping or terraces help control erosion. Crops respond well to lime and fertilizer. Growing cover crops, regularly adding organic material, and returning crop residue to the soil help maintain organic matter content, improve soil tilth, and increase water-holding capacity.

This soil is moderately well suited to pasture. In some years midsummer droughtiness limits crop growth. Proper stocking rates, rotation grazing, applications of lime and fertilizer, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, white ash, American basswood, and American beech are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the slope. Designing dwellings to conform to the natural lay of the land helps overcome the slope limitation. Erosion is a hazard during construction.

The main limitations of this soil for local roads and streets are the frost-action potential and the slope. Constructing roads on coarse textured, raised fill will provide drainage away from the roadway. Erosion is a hazard in excavated, bare areas.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are slow percolation and the slope. Enlarging the absorption field or the trenches below the distribution lines will improve percolation. Placing the distribution lines on the contour and using drop boxes or other structures will ensure even distribution of effluent and enable the system to function more effectively.

This soil is in capability subclass IIIe.

VaD—Valois gravelly loam, 15 to 25 percent slopes. This moderately steep soil is deep and well drained. It is on the higher, complex slopes characteristic of end or lateral moraines. Areas of this soil are long and narrow or oval in shape and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown gravelly loam about 8 inches thick. The subsoil extends to a depth of 46 inches. The upper part is yellowish brown gravelly loam about 18 inches thick. The middle part is dark yellowish brown gravelly loam about 4 inches thick. The lower part is dark grayish brown gravelly loam about 16 inches thick. The substratum is dark grayish brown very gravelly loam to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Valois soils on gentler slopes or on short, steeper slopes. Also included are areas of the moderately well drained Nunda soils and the more gravelly Chenango soils. Also included, in some places, are stony areas. Special symbols indicate these stony areas on the soil map. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Valois soil is at a depth of more than 6 feet. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil and moderate to moderately rapid in the substratum. The available water capacity is moderate, and runoff is moderately rapid.

Most of the acreage is used for cropland, orchards, or woodland.

This soil is poorly suited to cultivated crops. Erosion is a severe hazard. In some years the soil is droughty during dry periods in summer. In areas rock fragments limit some cultivation practices. A conservation tillage system, stripcropping, and crop rotations that include several years of close-growing crops help control erosion. Crops respond well to lime and fertilizer. Growing cover crops, regularly adding organic material, and returning crop residue to the soil help maintain organic matter content, improve soil tilth, and increase the water-holding capacity.

This soil is moderately suited to pasture. Overgrazing will cause destruction of desirable pasture plants, especially during droughty periods in summer. Erosion is a hazard if the sod cover is destroyed. Proper stocking rates, rotation grazing, applications of lime and

fertilizer, and weed control help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, white ash, American basswood, and American beech are common on the soil. The slope is a moderate limitation to equipment use. Laying out logging roads on the contour helps control erosion.

The main limitation of this soil on sites for dwellings with basements is the slope. Cutting and filling in grading and constructing benches help overcome the slope limitation. Erosion is a hazard on excavated construction sites. Maintaining the vegetative cover adjacent to the site, diverting runoff from the higher areas, and timely revegetation following construction help control erosion.

The main limitation of this soil for local roads and streets is the slope. Adapting road design to the lay of the land or grading and landshaping help overcome this limitation.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the slope. Laying out distribution lines on the contour and using drop boxes or other structures will promote even distribution of effluent and enable the system to function more effectively.

This soil is in capability subclass IVe.

Wa—Wakeland silt loam. This nearly level soil is very deep and somewhat poorly drained. It is on flood plains of streams in areas of stratified silts. Areas of this soil are long and narrow in shape and range from 3 to 100 acres in size. Slopes range from 0 to 3 percent.

Typically, the surface layer is dark grayish brown silt loam about 9 inches thick. The substratum extends to a depth of more than 62 inches. The upper part is grayish brown, mottled silt loam. The lower part is yellowish brown, mottled silt loam.

Included with this soil in mapping are small areas of the moderately well drained Teel soils in the slightly higher areas and the poorly drained and very poorly drained Wayland soils in depressions. Also included are small areas of the somewhat poorly drained Raynham and Rhinebeck soils. Also included are areas of soils that have more gravel and less lime than the Wakeland soil. Along Normanskill Creek, areas of this Wakeland soil have been stripped of the surface layer for topsoil and in places fill material has been added. Included areas are as much as 3 acres and make up 15 to 30 percent of the map unit.

The seasonal high water table in this Wakeland soil is at a depth of 1 to 3 feet from January to April. The soil is subject to occasional flooding for brief periods from January to May. Depth to bedrock is more than 60 inches. Permeability is moderate. The available water capacity is high, and surface runoff is slow.

Most of the acreage is used for corn or hay. Some areas are used for pasture.

This soil is well suited to cultivated crops. In drained areas it is among the best suited soils in the county for food and fiber production. It is subject to flooding but normally not during the growing season. In some years the flooding delays planting. The seasonal high water table also delays planting. Field ditches and subsurface drains will improve drainage if suitable outlets are available. In places landshaping is needed to improve surface drainage. Protecting streambanks and improving channels are needed in some areas to reduce wetness. Cover crops and a conservation tillage system help maintain or improve soil tilth.

This soil is well suited to pasture. Restricted grazing when the soil is wet helps prevent surface compaction and destruction of pasture plants. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for eastern white pine is moderately high. Some areas are subject to streambank erosion. In some years the seasonal high water table softens the soil surface for brief periods in early spring. Red maple, eastern white pine, and white ash are common on the soil.

The main limitations of this soil on sites for dwellings are flooding and the seasonal high water table. Other soils in the nearby higher landscape positions are better suited to this use.

The main limitations of this soil for local roads and streets are flooding and the frost-action potential. Constructing roads on coarse textured fill material raised above flood levels will reduce flood damage and the frost-action potential. Laying out roads around the flood plain reduces construction costs and valuable cropland loss.

The limitations affecting the use of this soil as a site for septic tank absorption fields are flooding and the seasonal high water table. In some years flooding from adjacent streams will gouge out the distribution lines on this soil. Flooding and the seasonal high water table will cause most systems to malfunction. Other soils that are not subject to flooding are better suited to this use.

This soil is in capability subclass IIw.

WcA—Wassaic silt loam, 0 to 3 percent slopes. This nearly level soil is moderately deep and well drained to moderately well drained. It is on till plains on bedrock-controlled landscapes of the towns of Berne, Knox, and New Scotland. Areas of this soil are broad and irregularly shaped and range from 3 to 30 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil extends to a depth of 30 inches. The upper part of the subsoil is yellowish brown and dark yellowish brown loam. The lower part is dark yellowish brown, mottled silty clay loam. Limestone bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow, well drained to somewhat excessively drained Farmington soils and the very deep, moderately well drained Nunda soils. Also included, in the lower areas, are small areas of the somewhat poorly drained Angola soils. Areas of included soils are as much as 3 acres and make up 5 to 15 percent of the map unit.

The seasonal high water table in this Wassaic soil is at a depth of 2 to 3 feet in March and April. Depth to bedrock is 20 to 40 inches. It limits the rooting depth. Permeability is moderate in the surface layer and moderately slow to moderate in the subsoil. The available water capacity is moderate. Runoff is slow.

Most of the acreage is used for hay and pasture or is idle.

This soil is well suited to many cultivated crops grown in the area. It is among the best suited soils in the county for food and fiber production. The main limitations are the moderate depth to bedrock and the seasonal high water table. Installing random drainage ditches and subsurface drainage will allow use of equipment earlier in spring. Cover crops, a conservation tillage system, and crop residue mixed into the soil help maintain organic matter content and improve soil tilth.

This soil is well suited to pasture. Restricted grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and increase erosion. Diverting runoff and subsurface seepage from the higher adjacent areas will reduce water accumulation in some areas. Rotation grazing, proper stocking rates, yearly mowing, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the moderate depth to bedrock. Deep excavation is difficult because of the hard bedrock and jointed crevices and fractures. The included soils that are deeper to bedrock are better suited to this use. On this Wassaic soil, placing the dwelling on bedrock and adding fill around it is a suitable management practice. Installing foundation drains and applying protective coatings to basement walls help prevent the seepage above the bedrock that causes wet basements.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock and the frost-action potential. Carefully planning roads will avoid cutting grades into bedrock. Deep excavation is difficult because of the hard bedrock and jointed crevices and fractures. Providing coarse textured subgrade or base material to frost depth reduces the frost-action potential.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. In some areas where the bedrock is creviced, effluent contamination of ground water and nearby streams is a hazard. In some areas, however, adding suitable fill material will provide the required depth for the absorption field. Alternate sites on adjacent soils that are deeper to bedrock are better suited to this use.

This soil is in capability subclass IIs.

WcB—Wassaic silt loam, 3 to 8 percent slopes. This gently sloping soil is moderately deep and well drained to moderately well drained. It is on till plains on the bedrock-controlled landscapes in the towns of Berne, Knox, and New Scotland. Areas of this soil are broad and irregularly shaped and range from 3 to 20 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil extends to a depth of 30 inches. The upper part is yellowish brown and dark yellowish brown loam. The lower part is dark yellowish brown, mottled silty clay loam. Limestone bedrock is at a depth of 30 inches.

Included with this soil in mapping are small areas of the shallow, well drained to somewhat excessively drained Farmington soils and the very deep, moderately well drained Nunda soils. Also included, in the lower areas, are small areas of the somewhat poorly drained Angola soils. Included areas are as much as 3 acres and make up 5 to 10 percent of the map unit.

The seasonal high water table in this Wassaic soil is at a depth of 2 to 3 feet, perched above the bedrock, in March and April. Depth to bedrock is 20 to 40 inches. It restricts the rooting depth. Permeability is moderate in the surface layer and moderately slow or moderate in the subsoil. The available water capacity is moderate. Runoff is medium.

Most of the acreage is used for hay and pasture or is idle.

This soil is well suited to many cultivated crops in the area. It is among the best suited soils in the county for food and fiber production. The main limitations are the moderate depth to bedrock, the seasonal high water table, and the slight erosion hazard. Random drainage ditches and subsurface drainage will allow use of equipment earlier in spring. Cover crops and incorporating crop residue into the soil help maintain organic matter content and improve soil tilth. A conservation tillage system and contour farming help control erosion.

This soil is well suited to pasture. Restricted grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and increase the hazard of erosion. Diverting runoff and subsurface seepage from the higher adjacent areas will reduce water accumulation in some areas. Rotation grazing, proper stocking rates, weed control, and restricted grazing during wet periods help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the moderate depth to bedrock. Deep excavation is difficult because of the hard bedrock and the jointed crevices and fractures. The included soils in this unit that are deeper to bedrock are better suited to this use. On this Wassaic soil, placing the dwelling on the bedrock and adding fill around it are suitable management practices. Installing foundation drains and applying protective coatings to basement walls help prevent the seepage above the bedrock that causes wet basements.

The main limitations of this soil for local roads and streets are the moderate depth to bedrock and the frost-action potential. Carefully planning roads will avoid cutting grades into bedrock. Deep excavation is difficult because of the hard bedrock and the jointed crevices and fractures. Avoiding coarse textured subgrade or base material to frost depth reduces the frost-action potential.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to bedrock. In some areas where the bedrock is creviced, effluent contamination of the ground water and nearby streams is a hazard. In some areas, however, adding suitable fill material will provide the required depth for the absorption field. Alternate sites on other soils that are deeper to bedrock are better suited to this use.

This soil is in capability subclass IIe.

WcC—Wassaic silt loam, 8 to 15 percent slopes. This strongly sloping soil is moderately deep and well drained to moderately well drained. It is on bedrock-controlled uplands mainly in the towns of Berne, Knox, and New Scotland. Areas of this soil are long and narrow and range from 3 to 15 acres in size.

Typically, the surface layer is dark brown silt loam about 9 inches thick. The subsoil is 21 inches thick. The upper part is yellowish brown and dark yellowish brown loam. The lower part is dark yellowish brown silty clay loam. Jointed limestone bedrock is at a depth of 30 inches.

Included with this soil in mapping, on small ridges, are the shallow, well drained to somewhat excessively drained Farmington soils and the very deep, moderately well drained Nunda soils. Also included are the very deep, well drained Nellis soils. Included areas are as much as 3 acres and make up 10 percent of the map unit.

The seasonal high water table in this Wassaic soil is at a depth of 2 to 3 feet in March and April. Depth to bedrock is 20 to 40 inches. It restricts rooting depth. Permeability is moderate in the surface layer and moderately slow or moderate in the subsoil. The available water capacity is moderate. Runoff is medium.

Most of the acreage is used as hayland, pasture, or brushland.

This soil is moderately suited to cultivated crops. The main limitations are the moderate depth to bedrock, the seasonal high water table, and a moderate erosion hazard. A conservation tillage system, contour farming, and stripcropping or terraces help control erosion. Random subsurface drains will lower the water table. Growing cover crops and regularly adding organic material increase soil moisture during dry periods and improve soil tilth.

This soil is moderately well suited to pasture. Restricted grazing during wet periods, rotation grazing, and proper stocking rates help keep the pasture in good condition.

The potential productivity of this soil for sugar maple is moderate. Sugar maple, northern red oak, and white ash are common on the soil. The erosion hazard, windthrow hazard, equipment limitation, and rate of seedling mortality are slight. On long slopes, however, constructing roads on the contour and installing water bars help control erosion.

The main limitation of this soil on sites for dwellings with basements is the moderate depth to bedrock. The included soils in this unit that are deeper to rock are better suited to this use. Building the foundation above bedrock and landscaping with additional fill are suitable management practices. Installing foundation drains and adequately sealing foundations help prevent the seepage above bedrock that causes wet basements. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site and diverting runoff from the higher areas help control erosion.

The main limitations of this soil for local roads and streets are the slope, the depth to bedrock, and the frost-action potential. Laying out local roads and streets on the contour and on raised fill composed of coarse textured base material reduces wetness. Carefully planning roads and grades will avoid removal of bedrock.

The main limitation affecting the use of this soil as a site for septic tank absorption fields is the depth to

bedrock. The bedrock is jointed and fractured, and the soil above bedrock is not deep enough to adequately filter effluent. Consequently, effluent seepage or ground-water contamination is a hazard. Alternate sites on adjacent soils that are deeper to bedrock are better suited to this use.

This soil is in capability subclass IIIe.

WnC—Wassaic-Nellis silt loams, rolling, very rocky. This map unit consists of a moderately deep Wassaic soil and the very deep Nellis soil. In some areas bedrock is exposed at the surface. Both Wassaic and Nellis soils are well drained and moderately well drained. This unit is on bedrock-controlled landforms. It consists of about 35 percent Wassaic soil, 30 percent Nellis soil, 25 percent other soils, and 10 percent rock outcrops. The Wassaic and Nellis soils are so intermingled that separating them in mapping was not practical. Individual areas are broad and irregularly shaped and range from 3 to 40 acres. Slopes range from 8 to 15 percent.

Typically, the surface layer of the Wassaic soil is dark brown silt loam about 9 inches thick. The subsoil extends to a depth of 30 inches. The upper part is yellowish brown and dark yellowish brown loam. The lower part is dark yellowish brown, mottled silty clay loam. Gray limestone bedrock is at a depth of 30 inches.

Typically, the surface layer of the Nellis soil is dark brown silt loam about 11 inches thick. The subsoil extends to a depth of 36 inches. The upper part is brown loam. The lower part is brown and yellowish brown channery loam. The substratum is dark grayish brown channery loam and brown very channery loam to a depth of 65 inches or more.

Included with this soil in mapping, on small ridges, are areas of rock outcrop and the shallow Farmington soils. Also included, on the lower parts of ridges, are the very deep, well drained Valois soils and the very deep, moderately well drained Nunda soils. The somewhat poorly drained Burdett soils are also included in slight depressions. Included areas are as much as 3 acres in size and make up about 25 percent of the unit.

The seasonal high water table in this Wassaic soil is at a depth of 2 to 3 feet in March and April. Depth to bedrock is 20 to 40 inches. It restricts the rooting depth. Permeability is moderate in the surface layer and moderately slow or moderate in the subsoil. The available water capacity is moderate. Runoff is medium.

The seasonal high water table in this Nellis soil is at a depth of more than 72 inches. Depth to bedrock is more than 60 inches. Permeability is moderate in the surface layer and subsoil and moderate or moderately slow in the substratum. The available water capacity is moderate. Runoff is medium.

Most of the acreage is used as hayland or is forested.

The Wassaic and Nellis soils are poorly suited to cultivated crops. The main limitations are the moderate depth to bedrock on the Wassaic soil and the seasonal high water table. Areas of rock outcrop limit the use of equipment. Erosion is a moderate hazard. A conservation tillage system and crop rotations that include several years of close-growing crops help control erosion. Random subsurface drains will lower the water table. Growing cover crops and regularly adding organic material help maintain soil tilth.

These soils are better suited to pasture. Restricted grazing during wet periods, rotation grazing, proper stocking rates, and weed control help keep the pasture in good condition.

The potential productivity of these soils for sugar maple is moderate. On long slopes, constructing roads on the contour and installing water bars help control erosion. Sugar maple, northern red oak, white ash, and eastern white pine are common on the soil.

The main limitations of these soils for local roads and streets are the slope, the depth to bedrock, and the frost-action potential. Building local roads and streets on the contour and on raised fill composed of coarse textured base material will reduce the frost-action potential and overcome the slope limitation.

The main limitations affecting the use of these soils as sites for septic tank absorption fields are slow percolation and the depth to bedrock. The bedrock is jointed and fractured, and the Wassaic soil is generally not deep enough above bedrock to adequately filter the effluent. Consequently, on the Wassaic soil, effluent seepage or ground-water contamination is a hazard. The Nellis soil is better suited to this use. On the Nellis soil, an enlarged absorption field or trenches below the distribution line will improve percolation.

This soil is in capability subclass VIs.

Wo—Wayland silt loam. This nearly level soil is very deep and poorly drained and very poorly drained. It is in depressions on flood plains along major streams. Areas of this soil are irregularly shaped and range from 3 to 40 acres in size. Slopes range from 0 to 3 percent.

Typically, the surface layer is very dark grayish brown silt loam about 5 inches thick. The subsurface layer is dark gray, mottled silt loam about 5 inches thick. The subsoil is 26 inches thick. The upper part is dark gray, mottled silt loam. The lower part is dark gray, mottled silty clay loam. The substratum is dark gray gravelly fine sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are the somewhat poorly drained Wakeland soils in the slightly higher areas. Also included are small areas of Middlebury soils. Included areas are as much as 3 acres and make up 10 to 20 percent of the map unit.

The seasonal high water table in this Wayland soil is at a depth of less than ½ foot from November to June. The soil is subject to frequent flooding for brief periods from November to June. Depth to bedrock is more than 60 inches. Depth to the water table affects the rooting depth. Permeability is moderate or moderately slow in the surface layer and slow in the subsoil and substratum. The available water capacity is high, and runoff is very slow or ponded.

Most of the acreage is idle. Some areas are used for pasture.

This soil is poorly suited to cultivated crops. Flooding and the seasonal high water table are the main limitations. Drainage is needed for best crop production, but outlets are generally difficult to establish because of the basinlike topography. Providing surface drainage with shallow ditches permits the growth of some short-season crops. Lowering the adjacent stream channel generally improves drainage. Protecting streambanks and improving channels are needed in some areas. Cover crops and a conservation tillage system help maintain soil tilth.

This soil is moderately suited to pasture. Restricted grazing when the soil is wet will prevent surface compaction and destruction of pasture plants. Proper stocking rates, rotation grazing, and weed control help keep the pasture in good condition.

The potential productivity of this soil for red maple is moderate. Some areas are subject to streambank erosion. The seasonal high water table is a severe limitation to equipment use. In addition, it causes a high rate of seedling mortality and a severe windthrow hazard. Black maple and black ash are common on the soil.

The main limitations of this soil on sites for dwellings with basements are flooding and the seasonal high water table. Alternate sites on the nearby higher soils will avoid the high risk of water damage and are better suited to this use.

The main limitations of this soil for local roads and streets are flooding, low strength, and the seasonal high water table. Constructing roads on coarse textured fill material helps to prevent road damage. Building roads around the flood plain will reduce construction costs.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are flooding, slow permeability, and the seasonal high water table. In some areas flooding from adjacent streams will gouge out the distribution lines. Flooding and the seasonal high water table will cause most systems on this soil to malfunction. Alternate sites on soils that are higher on the landscape and that are not subject to flooding are better suited to this use.

This soil is in capability subclass IVw.

WrB—Wellsboro silt loam, 3 to 8 percent slopes. This gently sloping soil is very deep and moderately well drained. It is on till plains near the foothills of the Catskill Mountains. Areas of this soil are irregularly shaped and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is brown and reddish brown, friable gravelly silt loam. The lower part is reddish brown, very firm and brittle very gravelly loam. A very firm and brittle layer, or fragipan, is in the subsoil.

Included with this soil in mapping are small areas of Morris soils in depressions, along drainageways, and in seepage spots. Also included are areas of the moderately deep Oquaga and Greene soils and the shallow Tuller soils. Small areas of the very deep, well drained Lackawanna soils are also included. Areas of included soils are as much as 3 acres and make up 15 to 25 percent of the map unit.

The seasonal high water table in this Wellsboro soil is perched above the fragipan, at a depth of 1½ to 3 feet from November to March. The fragipan restricts the rooting depth to 18 to 26 inches. Permeability is moderate above the fragipan and is slow below. Available water capacity is moderate. Unless limed, the soil is very strongly acid to moderately acid throughout.

Most areas of this soil are used as hayland, pasture, woodland, or brushland.

This soil is well suited to many cultivated crops. The depth to the fragipan and the seasonal high water table are the main limitations. Erosion is a hazard on long slopes. Diversions, contour farming, and cover crops help control erosion. Spot drainage in some of the wetter areas will allow earlier planting and increase yields. A conservation tillage system and returning crop residue to the soil help maintain soil tilth and increase the water-holding capacity of the soil.

This soil is well suited to pasture. The seasonal high water table is a problem in early spring. Restricted grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and increase erosion. Rotation grazing, proper stocking rates, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Seeds and seedlings survive

and grow well if competing vegetation is controlled. Northern red oak, sugar maple, and American beech are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and sealing foundations help prevent wet basements. Placing interceptor drains upslope from buildings will divert runoff and seepage. Erosion is a hazard during construction unless a vegetative cover protects the soil surface.

The main limitation of this soil for local roads and streets is the frost-action potential. Providing coarser grade subgrade or base material to frost depth helps prevent road damage.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing drainage around the absorption field and diverting runoff from the higher areas will reduce wetness. Enlarging the absorption field or installing trenches below the distribution lines will improve percolation.

This soil is in capability subclass IIw.

WrC—Wellsboro silt loam, 8 to 15 percent slopes. This strongly sloping soil is very deep and moderately well drained. It is on till plains near the foothills of the Catskill Mountains. Areas of this soil are irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is friable brown and reddish brown gravelly silt loam. The lower part is very firm and brittle, reddish brown, very gravelly loam. A very firm and brittle layer, or fragipan, is in the subsoil.

Included with this soil in mapping are small areas of Morris soils in depressions, along drainageways, and in seepage spots. Also included are areas of the moderately deep Oquaga and Greene soils and the shallow Tuller soils. Small areas of the very deep, well drained Lackawanna soils are also included. Areas of included soils are as much as 3 acres and make up 15 to 20 percent of the map unit.

The seasonal high water table in this Wellsboro soil is perched on the fragipan, at a depth of 1½ to 3 feet from November to March. The fragipan restricts the rooting depth to 18 to 26 inches. Permeability is moderate above the fragipan and slow within. Available water capacity is moderate, and surface runoff is medium. Unless limed, the soil is very strongly acid to moderately acid throughout.

Most areas of this soil are used as hayland, woodland, pasture, or brushland.

This soil is moderately suited to many cultivated crops. The depth to the fragipan and the seasonal high water table are limitations. Erosion is a moderate hazard. Diversions, contour farming, and stripcropping or terraces help control erosion. Spot drainage in some of the wetter areas will allow earlier planting and increase yields. A conservation tillage system and returning crop residue to the soil will improve soil tilth and increase the water-holding capacity.

This soil is moderately well suited to pasture. The seasonal high water table is a problem in early spring. Restricted grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and increase erosion. Rotation grazing, proper stocking rates, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Seeds and seedlings survive and grow well if competing vegetation is controlled. Northern red oak, sugar maple, and American beech are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and sealing foundations help prevent wet basements. Placing interceptor drains upslope from buildings will divert runoff and seepage. Erosion is a hazard during construction unless vegetative cover protects the soil.

The main limitation for local roads and streets on this soil is the frost-action potential. Providing coarse textured subgrade or base material to frost depth helps prevent road damage.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing drainage around the absorption field and diverting runoff from the higher areas will reduce wetness. Enlarging the absorption field or installing trenches below the distribution line will improve percolation.

This soil is in capability subclass IIIe.

WrD—Wellsboro silt loam, 15 to 25 percent slopes. This moderately steep soil is very deep and moderately well drained. It is on till plains near the foothills of the Catskill Mountains. Areas of this soil are irregularly shaped and range from 3 to 25 acres in size.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is friable, brown and reddish brown gravelly silt loam. The lower part is very firm and brittle, reddish brown, very gravelly loam. A very firm and brittle layer, or fragipan, is in the subsoil.

Included with this soil in mapping are small areas of Morris soils along drainageways and in seepage spots. Also included, on similar landscapes, are areas of the well drained Lackawanna soils. Also included, on the

higher parts of ridges, are the moderately deep Oquaga soils. Included areas are as much as 3 acres in size and make up as much as 15 percent of the map unit.

The seasonal high water table in this Wellsboro soil is perched on the fragipan, at a depth of 1½ to 3 feet, from November to March. The fragipan restricts the rooting depth to 18 to 26 inches. Permeability is moderate above the fragipan and slow within. Available water capacity is moderate, and surface runoff is rapid. Unless limed, the soil is very strongly acid to moderately acid throughout.

Most areas of this soil are used as hayland, woodland, pasture, or brushland.

This soil is poorly suited to many cultivated crops grown in the area. The slope and the severe erosion hazard are the main limitations. The depth to the fragipan and the seasonal high water table are also limitations. A conservation tillage system that leaves crop residue on the surface after planting, stripcropping or terraces, and crop rotations that include several years of close-growing crops will control erosion. Spot drainage in some of the wetter areas will allow earlier planting and increase yields. Regularly adding organic matter and returning crop residue to the soil will improve soil tilth and increase the water-holding capacity. Liming will produce the best yields of field crops.

This soil is moderately suited to pasture. The seasonal high water table is a problem in early spring. Restricted grazing when the soil is wet will cause surface compaction, destroy pasture grasses, and increase erosion. Rotation grazing, proper stocking rates, and weed control help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. The slope is a moderate limitation to equipment use. Seeds and seedlings survive and grow well if competing vegetation is controlled. Northern red oak, sugar maple, beech, white ash, and black cherry are common on the soil.

The main limitations of this soil on sites for dwellings with basements are the slope and the seasonal high water table. Cutting and filling in grading and constructing benches help overcome the slope limitation. Installing foundation drains and sealing foundations help prevent wet basements. Interceptor drains to divert runoff reduce wetness and seepage. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site, diverting runoff from the higher areas, and timely revegetation following construction help control erosion.

The main limitations for local roads and streets are the frost-action potential and the slope. Providing a coarser texture subgrade or base material will reduce the frost-action potential. Constructing roads on the contour helps overcome the slope limitation.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table, the slope, and the slow percolation. Installing drainage around the absorption field and diverting runoff from the higher areas will reduce wetness. Enlarging the absorption field or installing trenches below the distribution line will improve percolation. Installing distribution lines on the contour and using drop boxes or other structures will ensure even distribution of effluent and enable the system to function more effectively.

This soil is in capability subclass IVe.

WsC—Wellsboro silt loam, 3 to 15 percent slopes, very stony. This gently sloping to strongly sloping soil is very deep and moderately well drained. Large stones cover 3 to 15 percent of the surface. The soil is on side slopes where drainageways originate and has few seeps. Areas of this soil are irregularly shaped and range from 3 to 50 acres in size.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil extends to a depth of 60 inches or more. The upper part is friable, brown and reddish brown gravelly silt loam. The lower part is very firm and brittle, reddish brown, very gravelly loam. A very firm and brittle layer, or fragipan, is in the subsoil.

Included with this soil in mapping are areas of the somewhat poorly drained Morris soils along small drainageways or in seep spots. Also included, on the slightly higher landscapes and convex slopes, are small areas of the well drained Lackawanna soils. Also included are small areas of Oquaga soils in areas adjacent to bedrock-controlled landscapes. Included areas are as much as 3 acres and make up 15 percent of the map unit.

The seasonal high water table in this Wellsboro soil is at a depth of 1½ to 2 feet, perched on the fragipan, from November to March. The fragipan restricts the rooting depth to 18 to 26 inches. Permeability is moderate above the fragipan and slow within. Available water capacity is moderate. The soil is strongly acid to moderately acid throughout.

Most areas of this soil are used for woodland or pasture.

This soil is poorly suited to cultivated crops because many large stones are on the surface. Erosion is a moderate hazard. Removing the large stones before cultivation will allow effective and safe use of equipment. Also, removing stones and installing sufficient spot drainage will allow planting of crops. Depth to the fragipan restricts root growth. Consequently, in some areas available water during dry

periods is insufficient. Cover crops, a conservation tillage system, and crop residue mixed into the soil help maintain organic matter content and improve soil tilth. A conservation tillage system, contour farming or stripcropping, and a crop rotation with 1 or more years of close-growing crops help control erosion.

This soil is better suited to pasture. Large surface stones limit pasture management. Maintaining a ground cover and controlling surface runoff help control erosion. Restricted grazing when the soil is wet will prevent surface compaction. Overgrazing also reduces the quantity and quality of forage. Removing stones from the pasture will allow yearly mowing, reduce the risk of livestock injury, and increase forage density. Rotation grazing, proper stocking rates, and restricted grazing when the soil is wet help keep the pasture in good condition.

The potential productivity of this soil for northern red oak is moderately high. Constructing logging roads on the contour helps control erosion. Northern red oak, sugar maple, black cherry, and white ash are common on the soil.

The main limitation of this soil on sites for dwellings with basements is the seasonal high water table. Installing foundation drains and applying protective coatings to basement walls will prevent wet basements. Diversion ditches and interceptor drains placed upslope from buildings help divert runoff away from the site. Erosion is a hazard during construction. Maintaining the vegetative cover adjacent to the site and diverting runoff from the higher areas help control erosion.

The main limitation of this soil for local roads and streets is the frost-action potential. This soil is soft when wet, causing the pavement to crack under heavy traffic. Providing surface and subsurface drainage on the construction site and a coarse textured subgrade or base material will reduce wetness and the frost-action potential.

The main limitations affecting the use of this soil as a site for septic tank absorption fields are the seasonal high water table and slow percolation. Installing drainage around the absorption field and diverting runoff from the higher areas will reduce wetness. Enlarging the absorption field or installing trenches below the distribution lines will improve percolation.

This soil is in capability subclass VIs.

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited for food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. It either is used for food or fiber crops or is available for those crops. The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner (fig. 9). Prime farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Soil Conservation Service.

About 57,370 acres, or nearly 17 percent of Albany County, meets the soil requirements for prime farmland. Scattered areas are throughout the county, but many areas are in major valleys and on nearly level to undulating plains. The crops grown on this land are mainly corn, small grains, hay, vegetable crops, and nursery stock.

A recent trend in land use in some parts of the county has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in table 5. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps at the back of this publication. The qualities that affect use and management are described under the heading "Detailed Soil Map Units."

Soils that have limitations, such as a seasonal high water table, frequent flooding during the growing season, or inadequate rainfall qualify for prime farmland

Figure 9.—Scio soils in the foreground meet the requirements for prime farmland. Lordstown channery silt loam, 15 to 25 percent slopes, is on the drumlin in the background. It does not meet the requirements for prime farmland.

only in areas where these limitations have been overcome by such measures as drainage, flood control, or irrigation. The measures are indicated after the map unit name in table 5. Onsite evaluation is needed to determine whether or not these limitations have been overcome by corrective measures.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Prepared by V. Mark Franze, district conservationist, Soil Conservation Service; Thomas A. Gallagher, extension agent, Cooperative Extension Service; and Thomas Della Rocco, Agricultural Stabilization and Conservation Service.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

In 1974, according to the Census of Agriculture more than 109,000 acres in Albany County was in farms *(20)*. Of this total, 70,000 acres was cropland. Woodland and other land in farms made up 39,000 acres.

The potential for increased crop production is good in certain parts of the county. A large acreage of potentially good cropland is now used as pasture, woodland, or brushland. In addition to the reserve productive capacity that this land represents, if the latest technology and appropriate conservation practices were extended to all cropland, crops yields could be increased. This soil survey can facilitate the use of technology and the application of conservation practices.

The acreage in crops and pasture has decreased rapidly in the last few decades as more and more land is used for urban and recreation purposes. Using the soil survey to help make land use decisions that will influence the future of farming is discussed in the sections "Use and Management of the Soils" and "Detailed Soil Map Units."

Principles of Management

General principles of soil management for crop production are defined in the following paragraphs.

Soil erosion is a major hazard on about half the cropland in Albany County, according to the 1983 New York State Inventory of Soil and Water Conservation Needs *(19)*. The hazard of erosion is related to the slope of the land, the erodibility of the soil, the amount and intensity of rainfall, and the type of plant cover.

Figure 10.—A combination of conservation practices is often required to control erosion. Stripcropping is used in an area of Nunda silt loam, 8 to 15 percent slopes, in the background. The area of Burdett silt loam, 3 to 8 percent slopes, on the lower part of the slope is planted to grass.

Loss of soil through erosion results in loss of nutrients and water, formation of gullies on hillsides, deterioration of tilth, detrimental sedimentation downslope, and pollution of streams and water reservoirs. Soil productivity is reduced when the surface layer is lost and increasing amounts of the subsoil are incorporated into the plow layer. Loss of productivity is greater if the erosion occurs on such soils as Rhinebeck and Hudson soils, which have a fine textured or moderately fine textured subsoil or on such soils as Burdett and Nunda soils, which have a compact subsoil that restricts roots. Erosion also reduces productivity on soils that tend to be droughty, for example, Colonie and Chenango soils, through the loss of organic matter. Erosion permanently damages soils that are shallow or moderately deep over bedrock, such as Nassau, Manlius, and other soils. Silty soils, such as Unadilla and Scio soils, are highly erodible.

Erosion control provides protective cover, reduces runoff, and increases water infiltration. Many tillage and conservation practices help control erosion. Minimum tillage, no-till, cover crops, crop residue on the surface, and a cropping system that has a high proportion of sod crops are effective in controlling erosion on the soils that have short, irregular slopes, such as Colonie, Chenango, and Nassau soils. Contour tillage, stripcropping, terraces, and diversions, for example, are more suitable for soils that have smooth, long uniform slopes, such as the sloping Nunda and Burdett soils (fig. 10).

Erosion control generally is needed on slopes greater than 3 percent. Hudson, Unadilla, and Scio soils, which are high in silt content and do not contain coarse fragments, are highly susceptible to erosion.

Soil blowing is a hazard on such soils as the sandy Colonie soils and in cleared and drained areas of the organic Carlisle and Palms (muck) soils. The hazard of soil blowing is greater if the surface is dry. Windbreaks, regulating the water table, and irrigation help control wind erosion.

The effectiveness of particular combinations of conservation practices varies with the soils. Moreover, different combinations can be equally effective on the same soils. The local representative of the Soil Conservation District can assist in planning an effective combination of practices that help control erosion.

Drainage is needed on about one-third of the potential cropland in the survey area. On some wet soils, the production of crops commonly grown in the area is generally not possible unless extensive drainage is installed. Examples of these soils are the poorly drained and very poorly drained Ilion, Carlisle, Madalin, and Palms soils.

The seasonal high water table limits early planting, growth, and harvesting of most crops on the somewhat poorly drained soils, such as Burdett, Shaker, Raynham, and Rhinebeck soils. Productivity of crops increases on these soils if drainage is installed. On drained soils yields are commonly as high as on naturally well drained soils.

Some well drained and moderately well drained soils, such as Unadilla, Nunda, Riverhead, and Hudson soils, have small areas of wetter soils. Installing random subsurface drains in these small areas allows uniform management of fields.

Interceptor drains divert surface runoff and subsurface seepage. They are effective on some wet, sloping soils, such as Raynham and Rhinebeck soils.

The design of the drainage system varies with the kind of soil. A combination of surface and subsurface drainage is needed on most poorly drained and very poorly drained soils. Surface drainage includes open ditches, grassed waterways, land smoothing, and bedding. Subsurface drainage is mainly tile or plastic pipe. However, establishing drainage outlets is difficult and expensive on soils in low positions on the landscape.

Drains must be more closely spaced in slowly permeable soils than in more permeable soils. Subsurface drainage is slow on such soils as Burdett, Madalin, and Rhinebeck soils. Surface drainage may also be needed on these soils. Subsurface drainage is very effective in rapidly permeable soils, such as Stafford and Castile soils, if adequate outlets are available.

Information on installation and cost of drainage systems is available at the Albany County Soil and Water Conservation District Office.

Surface stones, boulders, and rock outcrops severely limit the use of soils as cropland and pasture in many areas, particularly in the western and central parts of the county. They limit the use of equipment. Some very stony and very bouldery soils, for example, the very stony Nunda and Burdett soils, can be used only as permanent pasture. But even on pasture, fertilizing, reseeding, and mowing are difficult on these soils. On the very stony Burdett soils, the prolonged seasonal high water table is also a limitation to use as pasture.

Removing the larger stones and boulders from some soils that have few other limitations may be feasible. Overcoming limitations in areas of soils that have rock outcrops, however, is generally not feasible. For example, on Lordstown-Arnot very rocky soils, the limitations generally cannot be overcome.

Available water capacity is important in growing crops. Some soils in the county have a fairly low capacity for storing moisture and tend to be droughty. These are the sandy and gravelly soils, soils that have a restricting layer such as a fragipan, and soils that are shallow or moderately deep over bedrock. The gravelly Chenango soils, the sandy Colonie soils, and the shallow Nassau soils have a low available water capacity. Green manure crops, crop residue, and manure increase the organic matter content, improve structure, and increase the available water capacity of these droughty soils.

Soil tilth is an important factor in the emergence of seedlings, the infiltration of water, and the ease of cultivation. Soils in good tilth generally are granular and porous.

Soil tilth depends on tillage. Excessive tillage tends to reduce organic matter content and break down soil structure. Some soils, for example, Riverhead and Chenango soils, that are deep, well drained or excessively drained and coarse textured or moderately coarse textured, can be tilled without damaging tilth. However, wetter and finer textured soils, such as Hudson, Rhinebeck, and Madalin soils, must be tilled at the proper moisture content to prevent deterioration of the natural structure. Plowing or cultivating these soils when wet causes puddling and results in a hard surface crust and clods when dry.

The soil can be kept granular and porous by cultivating at the proper moisture content; including sod crops, green manure crops, and cover crops in the crop rotation; returning crop residue to the soil; and applying manure.

All soils in the county need lime, fertilizer, or both for best crop production. The amount needed depends on the natural content of lime and plant nutrients, on the needs of the particular crop, and on the level of desired yields.

Organic matter content is important in assessing fertility. It averages about 3.5 percent in the surface layer of the soils in the survey area. The poorly drained and very poorly drained soils, such as Madalin and Ilion

soils, are somewhat higher in organic matter content.

The organic matter releases nitrogen, but much of it is in complex forms that plants cannot use until microorganisms decompose it. Nitrogen fertilizer is needed to supplement the natural nitrogen. Management that includes green manure crops, sod crops, and returning crop residue increases organic matter content and improves the natural nitrogen content.

Timely nitrogen fertilization is important in order for plants to utilize it to the maximum. Nitrogen can be lost through leaching in rapidly permeable soils, such as the Colonie soils, or through denitrification in wetter and less permeable soils, such as Rhinebeck soils. Applying small amounts of nitrogen at timely intervals has the best results. These intervals can be, for example, at planting time and then as a side dressing when the crop is growing.

The soils in Albany County are generally low in natural phosphorus. Coarse textured soils, such as Colonie and Chenango soils, tend to be very low in phosphorus. Adding commercial phosphate fertilizer is needed for plant growth.

Most of the soils are low or medium in available potassium. However, Hudson, Rhinebeck, and Madalin soils, which have a clayey subsoil, are somewhat higher in potassium content. Even on soils that have a fairly high potassium content, adding potassium increases yields of most crops.

Lime is needed on most of the soils in the survey area. It raises the pH to an acceptable level for best yields of most crops.

Additions of lime and fertilizer should be based on soil tests. Farmers and land managers can obtain soil tests and recommendations from the local cooperative extension agent. New research findings and fertilizer recommendations are available in current editions of "Cornell Recommendations for Field Crops" and "Vegetable Production Recommendations," both of which were prepared by the staff of the New York State College of Agriculture, Cornell University, Ithaca, New York. Instead of soil tests, these references along with this publication can be used as a guide in determining lime and fertility needs.

Special crops, including vegetable and orchard crops, in addition to the crops listed in table 6, are an important part of the agriculture in Albany County.

Orchard crops are grown on various kinds of soil, mostly in the vicinity of the Hudson River, where climatic factors are favorable. Apples are the main orchard crop of commercial importance. Also, pears and peaches are grown on a small acreage.

The most recent information and suggestions for growing orchard and vegetable crops and the estimated potential yields of these crops are available from the local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6 *(9)*. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do

they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, or *s*, to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w* or *s* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 7. The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

Prepared by Gerald J. Andritz, senior forester, New York State Department of Environmental Conservation, and Robert Smith, forester, Soil Conservation Serv ce.

The forests of Albany County are in the Eastern Deciduous Forest region and the Hudson Valley Oak Forest Community subregion, together known as the New England and Eastern New York uplands.

In 1969, the U.S. Forest Service classified 200,000 acres, or approximately 58 percent of Albany County, as commercial forest land *(16)*. Commercial forest land is defined as land producing or capable of producing crops of industrial wood and not withheld from this use. Farmers owned 22 percent of this forest land, and other private interests owned 75 percent. Only 3 percent of the forest land was publicly owned.

The following major forest types are recognized in the county. In the commercial forest acreage in the county, the volume of growing stock (live trees of commercial species) is given for each type.

The maple-beech-birch type makes up 60,300 acres and comprises 26 percent of the volume of growing stock. The elm-ash-red maple type makes up 46,700 acres and comprises 17 percent of the volume of growing stock. The white or red pine type makes up 41,000 acres and comprises 31 percent of the volume of growing stock. The oak type makes up 26,000 acres and comprises 14 percent of the volume of growing stock. Other softwood types make up 10,000 acres and comprise 6 percent of the volume of growing stock. The aspen-birch type makes up 8,100 acres and comprises 2 percent of the volume of growing stock. The oak-pine type makes up 7,200 acres and comprises 4 percent of the volume of growing stock.

In 1980, 39 percent of commercial forest land was stocked with sawtimber stands, 18 percent was stocked with poletimber stands, and 38 percent was stocked with seedling sample stands *(18)*. About 4.5 percent of commercial forest land was classified as nonstocked (less than 16.7 percent tree density).

Sawtimber stands are defined as live trees with a minimum diameter of 90 inches for softwoods and 11 inches for hardwoods. Poletimber stands include live trees at least 5 inches in diameter.

Table 8 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number,

indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, that the indicator species can produce. The larger the number, the greater the potential productivity. The number 1 indicates low productivity; 2 and 3, moderate; 4 and 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excessive water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S* sandy texture; and *F*, a high content of rock fragments in the soil. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

In table 8, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

Erosion hazard is the probability that erosion can occur as a result of site preparation or cutting where the soil is exposed along roads, skid trails, fire lanes, and log-handling areas. Forests that have been burned or overgrazed are also subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

The proper construction and maintenance of roads, trails, landings, and fire lanes will help overcome the erosion hazard.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment or season of use is not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Choosing the most suitable equipment and timing harvesting and other management operations to avoid seasonal limitations help overcome the equipment limitation.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that the seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

The use of special planting stock and special site preparation, such as bedding, furrowing, or surface drainage, can help reduce seedling mortality.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees but do not uproot them. A rating of *moderate* indicates that some trees can be blow down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

The use of specialized equipment that does not damage surficial root systems during partial cutting operations can help reduce windthrow. Care in thinning or no thinning also can help reduce windthrow.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class*. The site is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, is the yield likely to be produced by the most important trees. This number,

expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand. One cubic meter per hectare equals 14.3 cubic feet per acre.

The first species listed under *common trees* for a soil is the indicator species for that soil. It is the dominant species on the soil and the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production. Some soils, such as Adrian muck, are not suitable for commercial wood production. These soils do not contain an entry in this column.

Recreation

The soils of the survey area are rated in table 9 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

Prepared by Robert Myers, biologist, Soil Conservation Service.

Four different wildlife habitat zones are in Albany County: (1) the Appalachian Plateau, which includes the Helderburg Mountains in the western part of the county; (2) the urban-suburban zone in the northeast; (3) the Pine Bush residential zone north and immediately west of Albany; and (4) the Hudson River Valley south of Albany.

In the higher Appalachian Plateau, cropland, hayland, and pasture in support of dairy farming are associated with large areas of northern hardwood forests and scattered idle fields in the goldenrod, shrub, and early forest stages. Many idle farm fields have been planted to spruce and pine. This land use pattern results in good habitat for white-tailed deer, ruffed grouse, wild turkey, gray squirrel, cottontail, red and gray foxes,

coyote, and a variety of songbirds. Small populations of snowshoe hare have been established in areas where spruce and pine plantations are concentrated.

The urban-suburban zone mainly is Albany and much of the area north and east of the city. Random farms are mixed with residential areas both to the north and east. Also interspersed with the home sites are a few horse pastures, hayfields, large areas of idle land in goldenrod and shrubs, and small areas of forest. Cottontail, squirrels, deer, and a variety of songbirds are plentiful in this habitat zone.

The area of sandy soils commonly called the Pine Bush is north and immediately west of Albany. This zone supports predominantly scrub oak and pitch pine. Most of it is residential; very little of it is agriculture. The fewest species of wildlife in the county inhabit this zone. They include songbirds, deer, red squirrel, and foxes. Interestingly, one of two known populations of the Karner blue butterfly inhabits the Pine Bush. In New York State it is listed as an endangered species.

The more fertile, rolling Hudson River Valley is south of metropolitan Albany. It supports fruit, vegetable, and cash crop production in addition to dairy farming. Fields of grain corn are more common. The forests cover small areas and include some oak and pine. This habitat zone supports populations of deer, cottontail, red fox, squirrels, coyote, and songbirds. It also supports smaller populations of grouse and wild turkey. Raccoon, striped skunk, and opossum are common throughout the county.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 10, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, timothy, bromegrass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggartick, quackgrass, and ragweed.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of these plants are oak, birch, cherry, maple, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are gray dogwood, autumn-olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness.

Examples of coniferous plants are pine, spruce, yew, cedar, and hemlock.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, arrowhead, burreed, pickerelweed, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, swamps, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Wildlife attracted to these areas include bobwhite quail, meadow vole, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, frogs, and tree swallows.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreation uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the "Glossary."

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial

buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost-action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent,

surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and depth to the water table is less than 1 foot. These soils have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 18.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the "Glossary."

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 18.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓ bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low,* a change

of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

Some soils in table 17 are assigned to two hydrologic soil groups. Dual grouping is used for one of two reasons: (1) Some soils have a seasonal high water table but can be drained. In this instance the first letter applies to the drained condition of the soil and the second letter to the undrained condition. (2) In some soils that are less than 20 inches deep to bedrock, the first letter applies to areas where the bedrock is cracked and pervious and the second letter to areas where the bedrock is impervious or where exposed bedrock makes up more than 25 percent of the surface of the soil.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to two hydrologic groups in table 17, the first letter is for drained areas and the second is for undrained areas.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, or frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs, on the average, once or less in 2 years; and *frequent* that it occurs, on the average, more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that

delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely, grayish colors or mottles in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Engineering Index Test Data

Table 18 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are representative of the series described in the section "Soil Series and Their Morphology." The soil samples were tested by the New York State Department of Transportation, Bureau of Soil Mechanics.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); and Shrinkage—T 92 (AASHTO), D 427 (ASTM).

Engineering Properties of Geologic Deposits

Prepared by Edward A. Fernau, senior soil engineer, New York State Department of Transportation, Soil Mechanics Bureau.

This section discusses the engineering characteristics of the various unconsolidated geologic deposits in Albany County and their relation to soils. This discussion will help planners, designers, engineers, contractors, and others associated with construction projects involving earthy materials. It should be noted that terms used in soil engineering do not always mean the same as similar soil science terms.

The following geologic deposits occur in Albany County: glacial till, outwash, kame, lacustrine, alluvial, and organic. The mode of deposition of each geologic deposit determines the texture and the internal structure

of the material and influences to a great extent the engineering significance of the deposit. Other influences are the position of the geologic deposit on the landscape and the position of the water table. In Albany County the geologic deposits include the following categories: deep till deposits, shallow-to-rock deposits, stratified coarse-grained deposits, stratified fine-grained deposits, and organic deposits.

Deep till deposits are unstratified, highly variable mixtures of all particle sizes ranging from rock fragments of boulder size to clay. Glacial ice scoured and transported this material from nearby sources and deposited it as ground moraines. Bedrock is generally at a depth of more than 5 feet, but in some small areas it is closer to the surface or occurs as rock outcrop. The individual rock and mineral fragments in the soil generally reflect the bedrock in the immediate area.

Nunda, Burdett, Ilion, Busti, Valois, Wellsboro, and Morris soils formed in mixed deep till deposits. These soils are the densest and most compact of the unconsolidated deposits of the county. Most tills have been subjected to the compactive weight of overriding ice. Deep till soils are on slopes ranging from nearly level to very steep, and most of them are gently sloping to strongly sloping. These soils are on many landscapes where most construction includes cut and fill. These soils provide stable, relatively incompressible foundations for engineering works. Till material from these deposits when properly compacted generally provides stable embankments. Steep cut slopes generally are subject to surface sloughing and erosion.

Shallow-to-rock deposits are unstratified mixtures of glacially transported materials deposited as a thin veneer over bedrock. The glacial till material is generally 1 to 5 feet thick, and rock outcrops are common in some areas. The landforms and topography are generally bedrock controlled.

Arnot soils formed in mixed shallow till over sandstone. Farmington soils formed in mixed shallow till over limestone bedrock, and Manlius and Nassau soils formed over shale bedrock. The bedrock of the county is described in the section "Bedrock Geology."

Soils formed in shallow till deposits generally have adequate foundation strength for light structures; however, the primary engineering concerns may be the underlying bedrock and the ground-water conditions. The topography of some areas require cut and fill earthwork for extensive engineering works. In general, shale bedrock is softer and more deeply weathered than sandstone and limestone. The quantity of fill material is limited because of depth to bedrock.

Stratified coarse-grained deposits include materials, dominantly gravel and sand, that glacial meltwaters have sorted into layered or stratified deposits. They also include coarse-textured soils on flood plains. They are on such geologic landforms as outwash plains and terraces, kames, the coarser portions of deltas, alluvial fans, and flood plains. The strata within these deposits vary from well sorted to poorly sorted and range in particle size from cobbles to silt. The deposits are loose and porous.

Castile, Chenango, Riverhead, and Howard soils formed in gravelly deposits of outwash or kames. Chanango soils also are on alluvial fan deposits. Colonie soils are on deltas. Tioga and Middlebury soils formed in alluvium over sand and gravel.

Coarse-grained deposits generally have relatively high strengths. These deposits are loose and porous and not highly erodible but they are subject to settlement when vibrated. Tioga and Middlebury soils formed in alluvium over sand and gravel.

These gravel and sand deposits have many uses as construction material. Their uses depend on gradation, soundness, and plasticity. They may be used as fill material on highway embankments, in parking areas, and on construction sites where this material is needed to decrease stress on the underlying soils. They may also be used as subbase for pavements; wearing surfaces for driveways, parking lots, and some roads; material for highway shoulders; and free draining backfill for structures and pipes. In addition, they may be used outside shells of dams for impounding water and as slope protection blankets to drain and help stabilize wet, cut slopes.

Stratified fine-grained deposits consist of fine-grained sediments that glacial meltwater transported and deposited in quiet glacial lakes and ponds. Some are soils on more recent slack water deposits on flood plains. These soils have distinct layers or laminations generally of silt- and clay-sized particles. Although these deposits are mostly silt, they are generally clayey enough to make them plastic and sticky.

Hudson, Madalin, and Rhinebeck soils formed in deep, lake-laid silt and clay deposits. Elmridge and Shaker soils formed in shallow, sandy deposits over silt and clay. Unadilla, Scio, and Raynham soils formed in deep, silty deltas. Hamlin, Teel, and Wayland soils are alluvial and on flood plains.

These deposits have fine texture, high moisture content, and relatively low strength. They are generally highly compressible and, in some areas, continue to settle over long periods. If the soils are high in silt content, they are less compressible but highly erodible and susceptible to frost. The soils on flood plains are subject to flooding.

The fine-grained deposits, especially when wet, are difficult to use for engineering works. If the soils formed in these finer sediments are used for embankments and

heavy structures or buildings, onsite investigation is needed. The investigation is needed for strength and settlement characteristics and for ground-water effects.

Organic deposits are, for the most part, accumulated plant remains. In places they include minimal amounts of mineral soils. They are in very poorly drained depressions that are covered with water during part of the year.

Adrian, Carlisle, and Palms soils formed in organic deposits. These soils are not suited to use as sites for foundations because they are wet, weak, and highly compressible. Generally, removing the organic material to suitable underlying material and backfilling with a suitable material are needed. Filling over organic deposits will continue to settle for a long time.

Relationship Between Parent Material, Landscape Position, and Drainage of the Soils

Table 19 shows the relationship between parent material, position on the landscape, and drainage for the soils in Albany County. The type of parent material in which the soils formed are glacial till, outwash, lacustrine deposits, alluvial deposits, and organic material. The soils that formed in similar parent materials are grouped based on their depth to bedrock, for example, very deep or deep. The soils are also grouped by texture and by morphology of the parent material in which they formed. Finally, the soils are placed in a drainage class. Soils that have the same parent material, soil depth, and landscape position but different drainage class form a soil catena. Lackawanna, Wellsboro, and Morris soils are an example of a catena. Some soils, such as Manlius soils, have more than one drainage property and are in more than one drainage class. These soils will appear more than once on the table.

Table 19 establishes general relationships between the soils in the county. It supplements the sections "Formation of the Soils" and "Engineering Properties of Geologic Deposits." Detailed information on the morphology and character of each soil is given in the section "Soil Series and Their Morphology."

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(17)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 20 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Inceptisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquept (*Aqu*, meaning water, plus *ept*, from Inceptisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquept (*Hapl*, meaning minimal horizonation, plus *aquept*, the suborder of the Inceptisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Aeric* identifies the subgroup that is better drained than is typical for the subgroup. An example is Aeric Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(15)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(17)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Adrian Series

The Adrian series consists of very deep, very poorly drained soils in bogs and concave basins. These soils formed in well decomposed organic deposits of muck overlying sandy mineral deposits at a depth of 16 to 51 inches. Slope is 0 to 1 percent.

Adrian, Palms, and Carlisle soils formed in organic material. Adrian soils have a sandy substratum, Palms soils have a loamy substratum, and Carlisle soils are deeper than 51 inches to a mineral layer. Adrian soils are near Colonie, Elnora, Stafford, and Granby soils, which formed in sandy mineral deposits.

Typical pedon of Adrian muck, in the town of Bethlehem, 525 feet north of Russell Road and 750 feet northeast of the intersection of Russell Road and Krumkill Road, in a wooded swamp:

Oa1—0 to 12 inches; black (10YR 2/1) unrubbed and rubbed muck (sapric material); more than 5 percent fiber; 2 percent fiber rubbed; weak medium granular structure; slightly sticky; dominantly herbaceous fibers; neutral; clear wavy boundary.

Oa2—12 to 26 inches; black (10YR 2/1) broken face and dark reddish brown (5YR 2/2) rubbed muck (sapric material); 10 to 15 percent fiber; 5 percent fiber rubbed; massive; slightly sticky; dominantly herbaceous fibers; neutral; abrupt smooth boundary.

2C1—26 to 40 inches; dark gray (10YR 4/1) fine sand; massive; very friable; neutral; clear wavy boundary.

2C2—40 to 44 inches; very dark gray (10YR 3/1) fine sandy loam; massive; very friable; neutral; clear wavy boundary.

2C3—44 to 60 inches; dark gray (10YR 4/1) loamy fine sand; massive; slightly sticky; neutral.

The organic deposits range from 16 to 51 inches in thickness. Depth to bedrock is more than 60 inches. Rock fragments in the C horizon range from 0 to 20 percent.

The Oa1 horizon is neutral or has hue of 10YR, value of 2, and chroma of 1 or 2. Sapric material is dominant, but some pedons have stratified deposits of hemic and sapric material. Reaction ranges from slightly acid to moderately alkaline.

The Oa2 horizon is neutral or has hue of 5YR to 10YR. It has value of 2 or 3 and chroma of 0 to 3. When the soil is rubbed, colors are similar but vary 1 or 2 units in value, chroma, or both. Sapric material is dominant, but some pedons have layers of hemic material less than 10 inches thick. Reaction ranges from slightly acid to mildly alkaline.

The 2C horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. It is sand to very fine sandy loam or their gravelly analogs. Reaction ranges from slightly acid to moderately alkaline.

Allis Series

The Allis series consists of moderately deep, poorly drained soils in areas of bedrock-controlled, glaciated uplands. These soils formed in glacial till deposits derived from acid shale and overlie interbedded shale and sandstone. Slope ranges from 0 to 3 percent.

Allis soils formed in parent material similar to that of the somewhat poorly drained Hornell soils. Allis soils are nearby the shallow, somewhat excessively drained to moderately well drained Arnot soils and the moderately deep, well drained Lordstown soils. Lordstown soils have less clay in the subsoil than Allis soils. The very deep Nunda and Burdett soils are on landscapes near Allis soils.

Typical pedon of Allis silt loam, in the town of Guilderland, 189 feet north of the end of Sunset Drive, Altamont Village, in a side ditch:

Ap—0 to 9 inches; dark grayish brown (2.5Y 4/2) silt loam; weak fine subangular blocky structure; firm; many fine and medium roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

Bg1—9 to 16 inches; gray (5Y 5/1) silty clay loam; many medium prominent brown (7.5YR 5/4) and common medium distinct light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; firm; few fine pores; few fine roots; 10 percent rock fragments; neutral; clear smooth boundary.

Bg2—16 to 25 inches; olive gray (5Y 5/2) silty clay loam; gray (5Y 5/1) ped faces; common medium prominent strong brown (7.5YR 5/6) and many medium distinct yellowish brown (10YR 5/4) mottles; weak fine subangular blocky structure; firm; few fine pores; few fine roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

2C—25 to 34 inches; olive brown (2.5Y 4/4) very channery silty clay loam; few fine prominent light brownish gray (10YR 6/2) mottles; massive; firm; 50 percent rock fragments (weathered shale); neutral; abrupt smooth boundary.

2R—34 inches; massive interbedded grayish brown (2.5Y 5/2) sandstone and shale.

The solum and the depth to bedrock range from 20 to 40 inches. The content of rock fragments ranges from 2 to 35 percent, by volume, in the surface layer and subsoil and from 20 to 60 percent, by volume, in the substratum.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 2 to 4. Its texture is silt loam or silty clay loam in the fine earth fraction. Structure is granular or subangular blocky. Reaction is moderately acid to neutral.

The B horizon is neutral or has hue of 2.5Y or 5Y. It has value of 4 or 6 and chroma of 0 to 6. It has many or common, distinct or prominent mottles. Its texture is silty clay loam to clay in the fine earth fraction. Its structure is subangular blocky, platy, or prismatic. Its reaction is moderately acid to neutral.

The 2C horizon is neutral or has hue of 2.5Y (rubbed). It has value of 4 to 6 and chroma of 0 to 6. Mottles are distinct or prominent. Texture is silty clay loam to clay in the fine earth fraction. The horizon is massive or has platy structure. Reaction is moderately acid to neutral.

The Allis soils in this survey area are a taxadjunct to the Allis series because the pH is higher throughout the soil than defined in the range for the series. This difference does not significantly affect the use and management of the soils.

Angola Series

The Angola series consists of moderately deep, somewhat poorly drained soils on glaciated uplands. These soils formed in glacial till deposits derived from shale, siltstone, or sandstone. Slope ranges from 0 to 15 percent.

Angola soils formed in materials similar to those in which Burdett and Nunda soils formed. Burdett and Nunda soils are very deep to bedrock. Angola soils are near Kearsarge, Tuller, and Lordstown soils. Kearsarge and Tuller soils are shallow to bedrock and have less clay in the B horizon than Angola soils. Lordstown soils are moderately deep to bedrock and have less clay in the B horizon than Angola soils.

Typical pedon of Angola silt loam, 0 to 3 percent slopes, in the town of Berne, east of New York Route 85 and 0.5 mile north of Braman Corners, 150 feet south of dirt road:

Ap—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many fine and medium roots; 2 percent rock fragments; moderately acid; abrupt smooth boundary.

Bt1—10 to 19 inches; olive (5Y 5/3) silt loam; many medium prominent yellowish brown (10YR 5/6) mottles, many medium prominent strong brown (7.5YR 5/8) mottles, and few fine faint light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; sticky, slightly plastic; few fine roots; common fine pores; clay flows on faces of peds and along root channels; 10 percent rock fragments; slightly acid; clear wavy boundary.

Bt2—19 to 25 inches; grayish brown (2.5Y 5/2) channery silt loam; many medium prominent yellowish brown (10YR 5/6) mottles, many medium prominent strong brown (7.5YR 5/8) mottles, and few fine prominent reddish yellow (7.5YR 6/8) mottles; weak medium subangular blocky structure; slightly sticky, slightly plastic; few fine roots; common fine pores with clay films in pores and on faces of peds; slightly acid; abrupt smooth boundary.

R—25 inches; interbedded shale and sandstone bedrock.

The solum and the depth to bedrock ranges from 20 to 40 inches in thickness. The content of rock fragments ranges from 0 to 30 percent, by volume, in the A horizon, 2 to 35 percent in the B horizon, and 15 to 50 percent in the C horizon. Some pedons do not have a C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. Its texture is silt loam or silty clay loam in the fine earth fraction. Its structure is granular or subangular blocky. Its reaction is moderately acid to mildly alkaline.

The B horizon has hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 1 to 4. It has common to many mottles. Its texture is silt loam, loam, clay loam, or silty clay loam in the fine earth fraction. Its structure is moderate or strong, angular or subangular blocky. Its reaction is moderately acid to mildly alkaline.

The C horizon has hue of 5YR to 5Y, value of 2 to 4, and chroma of 1 to 4. Its texture is silt loam, loam, clay loam, or silty clay loam in the fine earth fraction. Its reaction is slightly acid to moderately alkaline. Some pedons do not have a C horizon.

The 2R horizon is brittle, thinly bedded shale and sandstone.

Arnot Series

The Arnot series consists of shallow, somewhat excessively drained to moderately well drained soils on bedrock-controlled uplands. These soils formed in glacial till deposits derived from siltstone, sandstone, and shale. Slope ranges from 0 to 70 percent but is dominantly 25 to 35 percent.

Arnot, Lordstown, Greene, Nassau, and Kearsarge soils formed in similar material. Arnot soils are shallow to bedrock, but Lordstown and Greene soils are moderately deep. Arnot soils formed over nearly level bedrock, but Nassau soils formed in areas of folded shale and slate bedrock. Arnot soils have more rock fragments than Kearsarge soils.

Typical pedon of Arnot very channery silt loam, 8 to 15 percent slopes, in the town of Coeymans, 40 yards north of Copeland Hill Road, ½ mile east of New York Route 32:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) very channery silt loam; weak fine granular structure; very friable; many fine roots; 35 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw—8 to 18 inches; brown (7.5YR 5/4) and strong brown (7.5YR 5/6) very channery silt loam; weak medium subangular blocky structure; friable; common fine roots; few fine tubular pores; 40 percent rock fragments; strongly acid; clear wavy boundary.

R—18 inches; dark gray (10YR 4/1) fractured siltstone bedrock.

The thickness of the solum and the depth to bedrock range from 10 to 20 inches. Rock fragments, dominantly siltstone, make up 15 to 35 percent of the volume in the surface layer and 35 to 50 percent in the subsoil. Reaction is strongly acid or very strongly acid throughout.

The A horizon has hue of 5YR to 2.5Y, value of 2 to 4, and chroma of 2 or 3. Its texture is silt loam or loam in the fine earth fraction. Its structure is weak or moderate granular.

The B horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Its texture is silt loam or loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky or granular, or is weak thin or medium platy.

Some pedons have a thin C horizon of very channery silt loam.

The 2R horizon is commonly siltstone, but does include interbedded sandstone and shale.

Birdsall Series

The Birdsall series consists of very deep, very poorly drained soils in depressional areas of terraces on old lakebeds. These soils formed in water-laid deposits of silt and very fine sand. Slope ranges from 0 to 2 percent.

Birdsall soils, the somewhat poorly drained Raynham soils, the moderately well drained Scio soils, and the well drained Unadilla soils formed in similar material. Birdsall soils are near the somewhat poorly drained Shaker soils. Shaker soils formed in thick, lake-laid deposits of sand over silt and clay.

Typical pedon of Birdsall mucky silt loam, in the town of Berne, 200 feet north of County Route 9 and 660 feet east of the intersection of County Routes 1 and 9:

Ap—0 to 8 inches; black (10YR 2/1) mucky silt loam, gray (10YR 5/1) dry; moderate medium granular structure; friable; many fine and medium roots; moderately acid; abrupt smooth boundary.

Bg—8 to 15 inches; gray (5Y 5/1) silt loam; few medium distinct yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm; common fine roots; few fine pores; neutral; clear wavy boundary.

C1g—15 to 28 inches; dark gray (5Y 4/1) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure; friable; few fine roots; few fine pores; slightly acid; clear wavy boundary.

C2g—28 to 35 inches; gray (5Y 5/1) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine pores; slightly acid; clear wavy boundary.

C3g—35 to 64 inches; dark gray (5Y 4/1) very fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; very friable; few fine pores; slightly acid.

The thickness of the solum and the depth to the varved material range from 14 to 30 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 3 percent throughout the soil profile.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. It is silt loam, very fine sandy loam, or its mucky analog. In some pedons it is muck or peat as much as 4 inches thick. Reaction ranges from very strongly acid to moderately acid.

The Bg horizon has hue of 2.5Y or 5Y, value of 3 to 6, and chroma of 1 or 2. It is silt loam or very fine sandy loam. Reaction ranges from strongly acid to neutral.

The Cg horizon is neutral or has hue of 2.5Y or 5Y. It has value of 4 to 7 and chroma of 0 to 2. It consists of varves of silt, silt loam, very fine sandy loam, or loamy very fine sand. Some pedons have layers of sandy or gravelly material, or both, 1 to 3 inches thick. Structure is weak coarse prismatic, or the horizon is massive. Reaction ranges from strongly acid to neutral.

Burdett Series

The Burdett series consists of very deep, somewhat poorly drained soils on till plains. These soils formed in a two-storied glacial till deposit with a mantle of windblown silt. Slope ranges from 0 to 15 percent.

Burdett soils are similar to Nunda soils and are commonly adjacent to Nunda and Ilion soils. Nunda

soils are moderately well drained and are yellower in the subsoil. Burdett soils are less gray in the subsoil than the poorly drained Ilion soils. Chautauqua and Busti soils are also near Burdett soils and have less clay in the subsoil.

Typical pedon of Burdett silt loam, 3 to 8 percent slopes, in the town of New Scotland, on the Winne farm, 3,100 feet east of the intersection of New York Route 32 and LaGrange Lane and 650 feet north of New York Route 32, in a hayfield east of transmission line:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many fine roots; 5 percent rock fragments; neutral; abrupt smooth boundary.

E/B—8 to 13 inches; brown (10YR 5/3) and pale brown (10YR 6/3) silt loam (E part) and dark grayish brown (2.5Y 4/2) silt loam (B part); many fine and medium distinct strong brown (7.5YR 4/6) mottles; weak fine and medium subangular blocky structure; friable; common fine roots; few medium tubular and few medium vesicular pores; 10 percent rock fragments; neutral; abrupt wavy boundary.

2Bt1—13 to 20 inches; grayish brown (2.5Y 5/2) and dark grayish brown (2.5Y 4/2) silty clay loam; gray (10YR 5/1) ped faces; many medium distinct yellowish brown (10YR 5/4) mottles; weak coarse prismatic structure parting to moderate medium and fine subangular blocky; firm; common fine roots; many fine vesicular pores; continuous thin gray (10YR 5/1) clay skins on faces of peds; many very dark brown (10YR 2/2) manganese stains; 10 percent rock fragments; neutral; gradual wavy boundary.

2Bt2—20 to 43 inches; dark grayish brown (10YR 4/2) gravelly silty clay loam; gray (10YR 5/1) ped faces; many fine faint yellowish brown (10YR 5/4 and 5/6) mottles and few fine and medium faint gray (10YR 5/1) mottles; weak coarse prismatic structure parting to moderate coarse and medium subangular blocky; firm; few fine roots; common fine vesicular and tubular pores lined with clay skins; discontinuous thick gray (10YR 5/1) clay skins on faces of peds; many very dark brown (10YR 2/2) manganese stains; 20 percent rock fragments; neutral; gradual wavy boundary.

2C—43 to 68 inches; dark grayish brown (10YR 4/2) and brown (10YR 5/3) gravelly silty clay loam; few medium faint yellowish brown (10YR 5/6) mottles; weak medium and thin platy structure; firm; common fine tubular pores with clay skins; 20 percent rock fragments; mildly alkaline.

The solum ranges from 30 to 50 inches in thickness. Depth to carbonates ranges from 30 to 72 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 30 percent, by volume, in the surface layer and in the upper part of the subsoil and from 10 to 35 percent below.

The Ap horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 2 or 3. It is silt loam or very fine sandy loam in the fine earth fraction. Structure is weak or moderate, medium or fine granular. Reaction ranges from strongly acid to neutral.

The E/B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. It has faint or distinct mottles. Its texture is sandy loam or silt loam in the fine earth fraction. Its structure is weak fine or medium subangular blocky. Its reaction ranges from strongly acid to neutral.

The 2Bt horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Ped faces have chroma of 2 or less. This horizon is loam, clay loam, or silty clay loam in the fine earth fraction, and clay content ranges from 28 to 35 percent. It has weak or moderate coarse prismatic or fine to coarse subangular blocky structure in the upper part and weak or moderate platy, subangular blocky, or prismatic structure in the lower part. Its reaction ranges from strongly acid to neutral.

The 2C horizon has hue of 5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It is silt loam, silty clay loam, loam, clay loam, or sandy clay loam in the fine earth fraction. It has weak or moderate, thin to thick platy structure or is massive. Reaction ranges from slightly acid to moderately alkaline.

Busti Series

The Busti series consists of very deep, somewhat poorly drained soils on glaciated uplands. These soils formed in glacial drift derived from siltstone and sandstone. Slope ranges from 0 to 8 percent.

Busti soils, the moderately well drained Chautauqua soils, and the well drained Valois soils formed in similar material. Unlike Chautauqua and Valois soils, Busti soils are more gray and mottled in the subsoil. Nunda, Burdett, and Chenango soils are on landscapes near Busti soils. Busti soils have less clay in the subsoil than Nunda and Burdett soils and have fewer rock fragments throughout the profile than the well drained Chenango soils.

Typical pedon of Busti silt loam, 3 to 8 percent slopes, in the town of Westerlo, 0.3 mile east of the intersection of New York Route 85 and County Route 1 and about 1,500 feet south, in a hayfield:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; many

fine and common very fine roots; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—9 to 17 inches; grayish brown (2.5Y 5/2) gravelly loam; common very dark grayish brown (2.5Y 3/2) root stains; many medium distinct light yellowish brown (10YR 6/4) mottles; weak fine subangular blocky structure; friable; common fine roots and few very fine roots; common fine and very fine tubular pores; 25 percent rock fragments less than 3 inches in size; slightly acid; clear wavy boundary.

Bw2—17 to 32 inches; dark grayish brown (2.5Y 4/2) gravelly loam; many medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; friable; few fine shallow pores; 30 percent rock fragments less than 3 inches in size; slightly acid; gradual wavy boundary.

C—32 to 60 inches; dark grayish brown (2.5Y 4/2) gravelly loam; massive; friable; 25 percent rock fragments less than 3 inches in size; slightly acid.

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 15 percent, by volume, in the surface layer, 10 to 30 percent in the subsoil, and 15 to 35 percent in the substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is loam or silt loam in the fine earth fraction. Its structure is weak or moderate, medium or fine subangular blocky or granular. Its reaction is moderately acid or slightly acid.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4. It has distinct or prominent mottles. Its texture is silt loam or loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky. Its reaction is moderately acid or slightly acid.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4. Some pedons are mottled. Texture is loam or silt loam in the fine earth fraction. The horizon is massive. Its reaction is moderately acid to slightly acid.

Carlisle Series

The Carlisle series consists of very deep, very poorly drained soils in depressions within glacial till plains and outwash plains. These soils formed in organic deposits of well decomposed woody and herbaceous plant remnants that are more than 51 inches thick. Slope is dominantly less than 1 percent.

Carlisle soils are similar to Adrian and Palms soils. Unlike Carlisle soils, Adrian and Palms soils have a mineral substratum above a depth of 51 inches. Carlisle soils are near the poorly drained and very poorly drained Madalin and Granby soils and the poorly drained Ilion soils. These soils formed in mineral deposits and are at the margin of depressions.

Typical pedon of Carlisle muck, in the town of Westerlo, about 1,320 feet south of the intersection of County Route 405 and Maple Avenue and 500 feet east of Maple Avenue:

Oa1—0 to 12 inches; black (10YR 2/1) broken face muck (sapric material); 10 percent fiber, 5 percent rubbed; massive; slightly plastic, nonsticky; few fine roots; dominantly herbaceous fibers; 20 percent mineral; neutral; clear smooth boundary.

Oa2—12 to 30 inches; very dark brown (10YR 2/2) broken face, muck (sapric material); 20 percent fiber, 5 percent rubbed; massive; slightly plastic, nonsticky; dominantly herbaceous material; 10 percent mineral; neutral; clear smooth boundary.

Oa3—30 to 56 inches; dark reddish brown (5YR 3/2) broken face muck (sapric material); 30 percent fiber, 10 percent rubbed; massive; slightly plastic, nonsticky; dominantly herbaceous material; 5 percent mineral; neutral; clear smooth boundary.

Oa4—56 to 99 inches; very dark gray (10YR 3/1) broken face muck (sapric material); 40 percent fiber, 15 percent rubbed; massive; slightly plastic, nonsticky; dominantly herbaceous material; less than 5 percent mineral; neutral.

The organic material is more than 51 inches thick. Depth to bedrock is more than 60 inches. Fibers are mainly herbaceous; but 10 to 25 percent are woody. Woody fragments from ¼ inch to more than 4 percent inches in diameter are throughout many pedons and consist of twigs, branches, or logs.

The Oa1 horizon is neutral or has hue of 10YR or 5YR, value of 2, and chroma of 1. Its structure is weak or moderate, fine to coarse granular, or the horizon is massive. Its reaction ranges from very strongly acid to neutral.

The Oa2, Oa3, and Oa4 horizons are neutral or have hue of 10YR or 5YR. They have value of 2 or 3 and chroma of 0 to 2. Chroma and value can vary 1 or 2 units when the soil is rubbed. These horizons are massive or have weak, granular or subangular blocky structure. Their reaction ranges from very strongly acid to neutral.

The material below the muck is loam, marl, or sand and gravel. Its reaction ranges from very strongly acid to mildly alkaline.

Castile Series

The Castile series consists of very deep, moderately well drained soils on glacial outwash plains, valley trains, eskers, and water-deposited moraines. These

soils formed in water-sorted gravel. Slope ranges from 0 to 8 percent.

Castile soils and the well drained Chenango soils formed in similar material. Castile soils are somewhat grayer in the subsoil than Chenango soils. Castile soils are on landscapes near the moderately well drained Nunda soils, the somewhat poorly drained Burdett soils, and the well drained to excessively drained Valois soils. Nunda and Burdett soils formed in silty deposits over compact glacial till. Valois soils formed in friable, reworked glacial till.

Typical pedon of Castile gravelly loam, 3 to 8 percent slopes, in the town of Guilderland, 753 feet south of Foundry Road, 0.25 mile west of the intersection with State Route 155, in woodland on a new road cut:

Ap—0 to 5 inches; dark brown (10YR 3/3) gravelly loam, light brownish gray (10YR 6/2) crushed and dry; weak fine granular structure; very friable; many fine roots; 20 percent gravel; strongly acid; abrupt wavy boundary.

Bw—5 to 18 inches; brown (10YR 5/3) gravelly loam; weak medium subangular blocky structure; very friable; many fine roots; 20 percent gravel; moderately acid; clear wavy boundary.

BC—18 to 28 inches; dark yellowish brown (10YR 4/4) gravelly loam; many medium distinct yellowish brown (10YR 5/6) mottles; common medium distinct dark brown (7.5YR 4/4) mottles and few medium distinct light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; common fine roots; 30 percent gravel; strongly acid; clear wavy boundary.

2C—28 to 60 inches; dark brown (10YR 3/3) stratified sands and gravel; common medium distinct dark brown (7.5YR 4/4) mottles; few medium distinct yellowish brown (10YR 5/6) mottles; single grain; loose; few fine roots; 60 percent gravel; moderately acid.

The solum ranges from 24 to 40 inches in thickness. Depth to bedrock is more than 60 inches. Depth to carbonates ranges from 5 to 10 feet. Rock fragments are mainly gravel but include as much as 10 percent cobblestones and flagstones. Rock fragment content ranges from 15 to 30 percent, by volume, in the A horizon, 20 to 60 percent in the B horizon, and 35 to 70 percent in the C horizon.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 or 3. It ranges from sandy loam to silt loam in the fine earth fraction. Its structure is weak or moderate granular. Its reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 7.5YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. It is mottled. It ranges from sandy loam to silt loam in the fine earth fraction. Structure is weak granular or subangular blocky. Reaction ranges from very strongly acid to moderately acid.

The BC horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture ranges from sandy loam to silt loam in the fine earth fraction. Its structure is weak granular or subangular blocky. Its reaction ranges from very strongly acid to moderately acid.

The C horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture ranges from loamy sand to sand or stratified sand and gravel. Its reaction is strongly acid to neutral.

Chautauqua Series

The Chautauqua series consists of very deep, moderately well drained soils formed in glacial drift derived from siltstone, sandstone, and shale. These soils are on glacial till plains. Slope ranges from 3 to 15 percent.

Chautauqua soils are in a drainage sequence with the somewhat poorly drained Busti soils. Chautauqua soils are associated with Nunda, Burdett, Ilion, and Lordstown soils on the landscape. Nunda, Burdett, and Ilion soils have more clay in the subsoil than Chautauqua soils. Lordstown soils are moderately deep to bedrock. They are on landscapes near Chautauqua soils.

Typical pedon of Chautauqua gravelly silt loam, 3 to 8 percent slopes, in the town of Westerlo, 1,700 feet east of the intersection of New York Routes 85 and 1 and 75 feet into the hayfield:

Ap—0 to 8 inches; dark brown (10YR 4/3) gravelly silt loam; weak fine granular structure; very friable; common fine and medium roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw1—8 to 15 inches; yellowish brown (10YR 5/6) gravelly loam; weak fine subangular blocky structure; very friable; many fine and very fine roots; common fine vesicular pores; 20 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—15 to 21 inches; yellowish brown (10YR 5/4) gravelly loam; common fine distinct brown (7.5YR 5/4) mottles and prominent strong brown (7.5YR 4/6) mottles and light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; very friable; many fine roots; common fine pores; 25 percent rock fragments; moderately acid; abrupt irregular boundary.

C1—21 to 34 inches; brown (10YR 5/3) gravelly loam; medium and thick platy structure; firm in place, friable when disturbed; few fine roots; few fine

tubular pores; 30 percent rock fragments; moderately acid; clear wavy boundary.

C2—34 to 64 inches; olive brown (2.5Y 4/4) very gravelly loam; massive; firm in place, friable when disturbed; few fine roots; 35 percent rock fragments; slightly acid.

The solum ranges from 20 to 45 inches in thickness. Depth to bedrock is more than 60 inches. Rock fragments make up 5 to 15 percent, by volume, of the surface layer, 5 to 30 percent of the subsoil, and 15 to 45 percent of the substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 to 4. It is loam or silt loam in the fine earth fraction. Reaction ranges from strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 6. Its texture ranges from silt loam to fine sandy loam in the fine earth fraction. Its structure is weak or moderate, fine or medium subangular blocky. Its reaction ranges from strongly acid to slightly acid.

The C horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture ranges from silt loam to fine sandy loam in the fine earth fraction. Its reaction ranges from moderately acid to neutral.

Chenango Series

The Chenango series consists of very deep, well drained or somewhat excessively drained soils on outwash terraces and plains. These soils formed in glacial outwash deposits. Slope ranges from 0 to 25 percent.

Chenango soils and the moderately well drained Castile soils formed in similar material. Chenango soils do not have mottles and are yellower in the subsoil than Castile soils. The moderately well drained Nunda soils, the somewhat poorly drained Burdett soils, and the well drained Valois soils are near Chanango soils. Nunda and Burdett soils formed in silty deposits over compact glacial till. Valois soils formed in friable, reworked glacial till.

Typical pedon of Chenango gravelly silt loam, loamy substratum, 0 to 3 percent slopes, in the town of New Scotland on Indian Ladder Farm, 120 feet southwest of the green Quonset hut barn, in an open field:

Ap—0 to 11 inches; dark brown (10YR 3/3) gravelly silt loam; pale brown (10YR 6/3) dry; strong medium and fine granular structure; friable; common fine roots; 20 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—11 to 17 inches; yellowish brown (10YR 5/4) gravelly silt loam; weak coarse subangular blocky structure parting to weak medium granular; firm; few fine roots; few coarse pores; 30 percent rock fragments; slightly acid; clear smooth boundary.

Bw2—17 to 31 inches; yellowish brown (10YR 5/4) and brown (10YR 5/3) very gravelly loam; weak coarse subangular blocky structure parting to weak fine and medium granular; firm; few fine roots; common coarse, fine and medium pores; 43 percent rock fragments; moderately acid; gradual wavy boundary.

BC—31 to 57 inches; matrix is 50 percent very dark grayish brown (2.5Y 3/2), 40 percent yellowish brown (10YR 5/4), and 10 percent yellowish brown (10YR 5/6) gravelly silt loam; weak coarse subangular blocky structure; firm; few fine roots; 30 percent rock fragments; moderately acid; gradual smooth boundary.

2C—57 to 74 inches; matrix is 80 percent dark grayish brown (2.5Y 4/2) and 20 percent yellowish brown (10YR 5/4) stratified very gravelly silt loam; massive; friable; common thin silt linings hold fine gravel together; 55 percent gravel; slightly acid.

The solum ranges from 24 to 60 inches in thickness. Depth to bedrock is more than 60 inches. Rock fragments, pebbles to flagstones in size, range from 10 to 30 percent, by volume, in the A horizon, 20 to 60 percent in the B horizon, and 30 to 70 percent in the C horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. Its texture ranges from sandy loam to silt loam in the fine earth fraction. Its structure is weak or moderate, medium or fine granular. Its reaction is strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Its texture is fine sandy loam, loam, very fine sandy loam, or silt loam in the fine earth fraction. Its structure is coarse subangular blocky or fine and medium granular, or the horizon is massive. Its reaction is very strongly acid to slightly acid.

The BC horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. Its texture is fine sandy loam, loam, very fine sandy loam, or silt loam in the fine earth fraction. Its structure is coarse subangular blocky or fine and medium granular, or the horizon is massive. Its reaction is strongly acid or moderately acid.

The C horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is loam or silt loam in the fine earth fraction. Its reaction ranges from strongly acid to mildly alkaline.

Claverack Series

The Claverack series consists of very deep, moderately well drained soils on glacial lake plains. These soils formed in water-deposited sands over

varved, lacustrine silts and clays. Slope ranges from 0 to 8 percent.

Claverack soils and the somewhat poorly drained Cosad soils formed in similar material. Claverack soils are yellower in the subsoil than Cosad soils. The well drained to excessively drained Colonie soils and the moderately well drained Elnora soils are on landforms near Claverack soils, where sand is at a depth of more than 40 inches.

Typical pedon of Claverack loamy fine sand, 3 to 8 percent slopes, in the city of Albany, 180 feet west of McCormack Road, 450 feet north of Normanskill Creek:

Ap—0 to 9 inches; dark brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; many fine and very fine roots; slightly acid; abrupt smooth boundary.

Bw1—9 to 17 inches; yellowish brown (10YR 5/4) loamy fine sand; few medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very friable; common fine and very fine roots; few pores; moderately acid; clear wavy boundary.

Bw2—17 to 19 inches; yellowish brown (10YR 5/4) loamy fine sand; few fine distinct grayish brown (2.5Y 5/2) mottles; common medium faint yellowish brown (10YR 5/6) mottles and common medium distinct dark brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; very friable; common very fine roots; common pores; moderately acid; clear wavy boundary.

Bw3—19 to 26 inches; dark yellowish brown (10YR 4/4) loamy fine sand; few medium distinct grayish brown (10YR 5/2) mottles and common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very friable; few very fine roots; few pores; slightly acid; abrupt wavy boundary.

2C—26 to 60 inches; brown (7.5YR 5/4 and 10YR 5/3) varved clay and silt; weak thick platy structure; firm; few very fine roots; few pores; light brownish gray (2.5Y 6/2) silt coatings on some faces of peds; neutral.

Thickness of the solum and depth to underlying clayey material range from 20 to 40 inches. Depth to bedrock is more than 60 inches.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is fine sandy loam to loamy fine sand. Structure is weak fine or medium granular. Reaction is strongly acid to neutral.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It has few or common high-chroma mottles. In some pedons the lower B horizon has gray or grayish brown mottles below a depth of 18 inches. Texture is loamy fine sand or fine sand. Structure is weak fine or medium subangular blocky. Reaction is moderately acid or slightly acid.

The 2C horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 3 or 4. Its texture is silty clay loam to clay. Its structure is weak, medium or thick platy as depositional varves. Its reaction is neutral to moderately alkaline.

Colonie Series

The Colonie series consists of very deep, well drained to somewhat excessively drained soils on lake plains, deltas, and dunes. These soils formed in lacustrine and windblown deposits dominantly fine sand and very fine sand. Slope ranges from 0 to 50 percent.

Colonie soils, the moderately well drained Elnora soils, and the somewhat poorly drained Stafford soils formed in similar material. The poorly drained or very poorly drained Granby soils are in nearby slight depressions. Colonie soils also are near Claverack, Hudson, Unadilla, and Riverhead soils. Unlike Colonie soils, Claverack soils have an underlying clayey substratum, Hudson soils have a high clay content, and Riverhead soils have underlying gravel fragments. Colonie soils have a lower silt content than Unadilla soils.

Typical pedon of Colonie loamy fine sand, 3 to 8 percent slopes (fig. 11), in the town of Colonie, 1,700 feet northwest of the intersection of Osborne Road and Albany Shaker Road and 920 feet southwest of Albany Shaker Road:

Ap—0 to 7 inches; dark brown (10YR 3/3) loamy fine sand; weak very fine and fine granular structure; very friable; many fine and medium roots; slightly acid; abrupt smooth boundary.

Bw1—7 to 24 inches; dark yellowish brown (10YR 4/4) loamy fine sand; massive; very friable; few fine roots; slightly acid; clear smooth boundary.

Bw2—24 to 45 inches; dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) loamy fine sand; massive; very friable; few fine roots; three dark brown (7.5YR 4/4) loamy fine sand, wavy lamellae that are 1/26 to 1/4 inch thick; slightly acid; abrupt wavy boundary.

Bw3—45 to 68 inches; yellowish brown (10YR 5/4) loamy fine sand; massive; very friable; three thin horizontal lamellae 1/32 inch thick of dark brown (7.5YR 4/4) loamy fine sand; massive; friable; slightly acid; abrupt wavy boundary.

C—68 to 80 inches; brown (10YR 5/3) loamy fine sand with lenses of fine sand; single grain; loose; neutral.

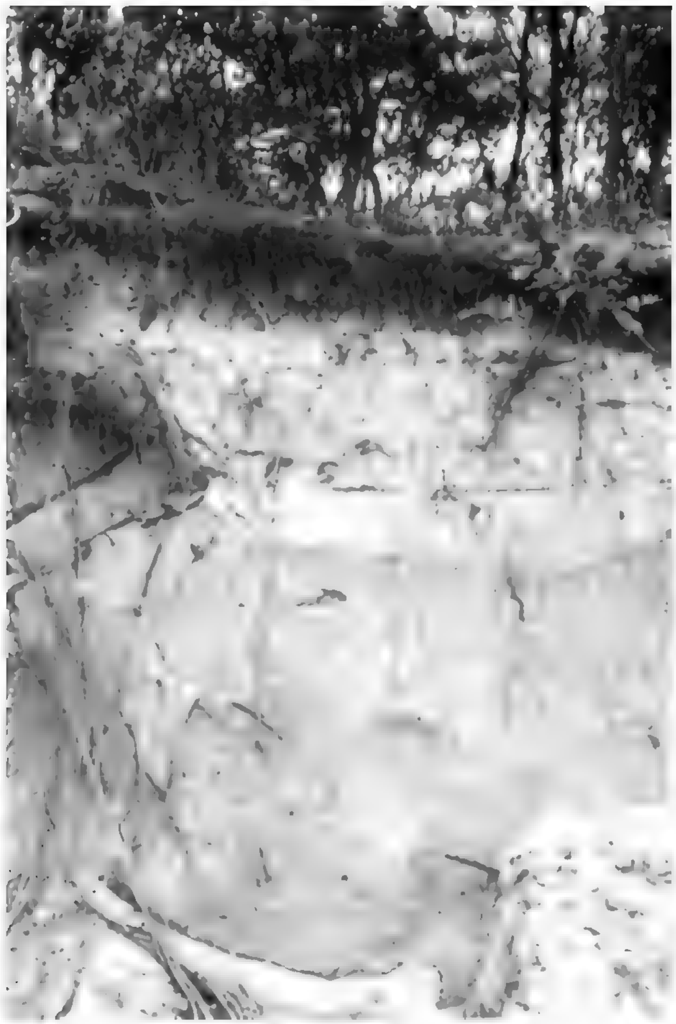


Figure 11.—Profile of Colonie loamy fine sand.

The solum ranges from 48 to 75 inches in thickness. Depth to bedrock is more than 60 inches. Generally, the pedon does not have rock fragments.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. It is loamy fine sand or fine sandy loam. Reaction ranges from slightly acid to strongly acid.

The B horizon has hue of 7.5YR to 10YR, value of 4 to 6, and chroma of 3 to 6. Its texture is loamy fine sand or fine sand. Lamellae are at depths of 24 to 80 inches. They have hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 to 4. Their texture is fine sand to fine sandy loam and is generally finer than the surrounding matrix. Reaction of the horizon ranges from slightly acid to strongly acid.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. Its texture is loamy fine sand or fine sand. Its reaction is moderately acid to neutral.

Cosad Series

The Cosad series consists of very deep, somewhat poorly drained soils on nearly level or depressional areas of glacial lake plains. These soils formed in sandy deposits that overlie clayey lacustrine sediments. Slope ranges from 0 to 3 percent.

Cosad soils and the moderately well drained Claverack soils formed in similar material. Elmridge, Shaker, Colonie, Elnora, and Stafford soils are on nearby landscapes. Cosad soils have coarser sands in the subsoil than Elmridge and Shaker soils. Cosad soils formed in thinner deposits of sand than Colonie, Elnora, and Stafford soils.

Typical pedon of Cosad loamy fine sand, in the town of Guilderland, on the western Turnpike Golf Course, 0.25 mile southeast of the intersection of U.S. Route 20 and State Route 146, in a small wooded area:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) loamy fine sand, grayish brown (10YR 5/2) crushed and dry; weak fine granular structure; very friable; many fine and very fine roots; strongly acid; abrupt wavy boundary.

Bw1—9 to 18 inches; brown (10YR 5/3) loamy fine sand; many coarse distinct yellowish brown (10YR 5/8) mottles, common medium distinct dark brown (7.5YR 4/4) mottles, and few medium faint grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; very friable; common fine and very fine roots; slightly acid; clear wavy boundary.

Bw2—18 to 26 inches; dark brown (10YR 4/3) loamy sand; many coarse distinct yellowish brown (10YR 5/8) mottles, common medium distinct dark brown (7.5YR 4/4) mottles, few medium distinct gray (10YR 5/1) mottles, and few medium distinct grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; few fine and very fine roots; neutral; clear wavy boundary.

2C—26 to 60 inches; gray (10YR 5/1) silty clay; common strata of grayish brown (10YR 5/2) silt loam and olive brown (2.5Y 4/4) very fine sandy loam; many coarse prominent yellowish brown (10YR 5/8) mottles and common coarse distinct dark gray (N 4/0) mottles; massive; firm; few pores; neutral.

The thickness of the solum and that of the sandy deposit ranges from 18 to 40 inches. Depth to bedrock is more than 60 inches. The content of rock fragments

ranges from 0 to 2 percent by volume.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 2 or 3, and chroma of 1 or 2. Its texture ranges from fine sandy loam to loamy fine sand in the fine earth fraction. Its reaction ranges from strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 4. It has low- and high-chroma mottles. It is massive or has weak subangular blocky structure. Reaction ranges from strongly acid to neutral.

The 2C horizon has hue of 5YR to 5GY, value of 3 to 6, and chroma of 1 to 4. Its texture is silty clay loam or silty clay in the fine earth fraction, which has lamina of silt loam and very fine sandy loam. The horizon is massive or has a platy structure as depositional varves. Its reaction ranges from neutral to moderately alkaline.

Elmridge Series

The Elmridge series consists of very deep, moderately well drained soils on glacial lake plains. These soils formed in a thin mantle of loamy material over varved lacustrine silts and clays. Slope ranges from 0 to 8 percent.

Elmridge soils and the somewhat poorly drained and poorly drained Shaker soils formed in similar material. Elmridge soils have a yellower subsoil than Shaker soils. The moderately well drained Claverack and Hudson soils and the somewhat poorly drained Cosad soils are on landscapes near Elmridge soils. Elmridge soils are lower in sand content in the subsoil than Claverack and Cosad soils. Elmridge soils have more sand in the control section than Hudson soils.

Typical pedon of Elmridge fine sandy loam, 3 to 8 percent slopes, in the town of Colonie, northwest of the intersection of Albany Shaker Road and Shaker Ridge Country Club driveway, 100 feet west of Albany Shaker Road, in a field:

Ap—0 to 9 inches; dark brown (10YR 3/3) fine sandy loam; weak fine and medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

Bw1—9 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; weak coarse and medium subangular blocky structure; very friable; many fine roots; material similar to the Ap horizon along some root channels; common fine vesicular pores; slightly acid; clear wavy boundary.

Bw2—16 to 20 inches; yellowish brown (10YR 5/4) loamy fine sand; common fine distinct dark brown (7.5YR 4/4) mottles, few fine faint grayish brown (10YR 5/2) mottles, and few medium distinct dark reddish brown (5YR 3/3) mottles; weak fine and medium subangular blocky structure; friable; common fine and very fine roots; material similar to the Ap horizon along some root channels; few fine tubular pores; slightly acid; abrupt smooth boundary.

2BC—20 to 28 inches; dark yellowish brown (10YR 4/4) clay loam (ped faces) and light olive brown (2.5Y 5/4) clay loam (ped interiors); many medium distinct yellowish brown (10YR 5/6) mottles and common fine and medium distinct gray (10YR 6/1) and dark reddish gray (5YR 4/2) mottles; weak medium and coarse prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; common fine vesicular and common medium tubular pores with some clay linings; moderately acid; clear wavy boundary.

2C1—28 to 41 inches; reddish brown (5YR 5/3), brown (10YR 5/3) (ped faces), and pinkish gray (7.5YR 6/2) silty clay that has varves of grayish brown (2.5Y 5/2) fine sand; common fine faint light brownish gray (10YR 6/2) mottles; weak coarse prismatic structure; firm; few fine roots along prism faces; few fine and medium tubular pores with some clay linings; ⅛- to ¼-inch varves; slightly acid; clear wavy boundary.

2C2—41 to 60 inches; reddish brown (5YR 5/3), brown (10YR 5/3), and pinkish gray (7.5YR 6/2) clay that has varves of grayish brown (2.5Y 5/2) fine sand; common fine faint light brownish gray (10YR 6/2) mottles; massive; firm; ⅛- to ¼-inch varves; mildly alkaline.

The thickness of the solum and the depth to underlying clayey material range from 18 to 40 inches. Depth to bedrock is more than 60 inches below the surface.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 1 to 3. Its texture is fine sandy loam, sandy loam, loam, or very fine sandy loam. Its structure is weak or moderate, fine or medium granular. Its reaction ranges from very strongly acid to slightly acid.

The Bw horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 3 to 6. Its texture is fine sandy loam, sandy loam, loamy fine sand, or loam. The 2B horizon, where present, has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 6. Its texture is silty clay loam, clay loam, or silty clay. The lower part of the B horizon and the 2BC horizon are generally mottled. Structure in the B horizon is weak or moderate, fine through coarse subangular blocky or prismatic, or the horizon is massive. Reaction ranges from very strongly acid to slightly acid.

The 2C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 2 to 4. Its texture is silty clay loam,

silty clay, or clay. Its structure is weak, medium or thick platy or coarse prismatic, or the horizon is massive. Reaction ranges from moderately acid to mildly alkaline.

Elnora Series

The Elnora series consists of very deep, moderately well drained soils on glacial lake plains and deltas. These soils formed in wind- or lacustrine-deposited sands. Slope ranges from 0 to 8 percent.

Elnora soils, the well drained to excessively drained Colonie soils, the somewhat poorly drained Stafford soils, and the poorly drained to very poorly drained Granby soils formed in similar material. Colonie soils do not have mottles above a depth of 40 inches, and Stafford soils have mottles just below the Ap horizon. Granby soils have a black surface horizon. Elnora soils are near the moderately drained Claverack soils, which are sand to a depth of less than 40 inches, and varved lacustrine sediments.

Typical pedon of Elnora loamy fine sand, 3 to 8 percent slopes, in the town of Colonie, 0.5 mile west of Northway (I-87) and 600 feet north of transmission line, in field along transmission line:

Ap1—0 to 8 inches; dark brown (10YR 3/3) loamy fine sand; pale brown (10YR 6/3) dry; weak fine and medium granular structure; very friable; many fine and few medium roots; slightly acid; clear smooth boundary.

Ap2—8 to 11 inches; very dark gray (10YR 3/1) loamy fine sand; light gray (10YR 6/1) dry; common fine distinct dark reddish brown (5YR 3/4) root stains; weak fine and medium subangular blocky structure; very friable; common fine and few medium roots; slightly acid; clear smooth boundary.

Bw—11 to 27 inches; yellowish brown (10YR 5/6) fine sand; few fine faint yellowish red (5YR 5/8 and 4/6) mottles, and few fine distinct light brownish gray (10YR 6/2) mottles in lower part of horizon; weak medium and coarse subangular blocky structure; friable; common fine roots; few medium tubular and common fine vesicular pores; few macropores with material similar to the Ap horizon; slightly acid; clear wavy boundary.

C1—27 to 32 inches; brown (10YR 5/3) loamy very fine sand; common fine faint yellowish brown (10YR 5/4) mottles, common fine faint gray (10YR 5/1) mottles, and few fine distinct dark brown (7.5YR 4/4) mottles; massive; friable; slightly acid; gradual wavy boundary.

C2—32 to 65 inches; dark gray (10YR 4/1) loamy fine sand; common medium and coarse grayish brown (10YR 5/2) mottles; massive; friable; moderately acid.

The solum ranges from 20 to 40 inches in thickness. Depth to bedrock and texturally contrasting material is more than 6 feet below the surface.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 1 to 3. It is loamy fine sand to fine sandy loam and very fine sandy loam. Structure is weak fine or medium granular or subangular blocky. Reaction is very strongly acid to slightly acid.

The B horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 3 to 6. It is mottled. It is loamy fine sand or fine sand. Structure is weak medium or coarse blocky. Reaction is very strongly acid to slightly acid.

The C horizon has hue of 5YR to 5Y, value of 3 to 5, and chroma of 1 to 4. It is mottled. It is fine sand, loamy very fine sand, or loamy fine sand. The horizon is massive. Its reaction is strongly acid to neutral.

Farmington Series

The Farmington series consists of shallow, well drained and somewhat excessively drained soils on bedrock-controlled uplands. These soils formed in a thin mantle of glacial till over hard bedrock, mainly limestone, at a depth of 10 to 20 inches. Slope ranges from 0 to 60 percent.

Farmington soils, the well drained to moderately well drained Wassaic soils, the well drained Nellis soils, the somewhat excessively drained Nassau soils, and the somewhat excessively drained to moderately well drained Arnot soils formed in similar material. Farmington soils are less than 20 inches to bedrock, Wassaic soils are 20 to 40 inches deep over bedrock, and Nellis soils are more than 60 inches deep over bedrock. Nassau and Arnot soils have more than 35 percent rock fragments in the solum. The moderately well drained Nunda soils are on nearby landforms and are deeper than 60 inches to bedrock.

Typical pedon of Farmington silt loam, 0 to 8 percent slopes, in the town of Knox, 660 feet north and ¾ mile west of the intersection of Route 156 and Witter Road:

Ap—0 to 9 inches; dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; very friable; many fine roots; 5 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw1—9 to 12 inches; dark brown (10YR 4/3) silt loam; moderate fine granular structure; very friable; common fine roots; 5 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—12 to 19 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; common medium pores;

5 percent rock fragments; moderately acid; abrupt smooth boundary.

R—19 inches; jointed limestone bedrock.

The thickness of the solum and the depth to bedrock ranges from 10 to 20 inches. The content of rock fragments ranges, by volume, from 5 to 35 percent.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 to 3. Its texture is silt loam, loam, or fine sandy loam in the fine earth fraction. Its reaction is strongly acid to slightly acid.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 6. Its texture is silt loam, loam, or fine sandy loam in the fine earth fraction. Its structure is moderate, fine granular or weak, fine subangular blocky. Its reaction ranges from moderately acid to mildly alkaline.

The bedrock is jointed limestone, except in some areas it is hard shale or sandstone.

Fluvaquents

Fluvaquents consist of very deep, somewhat poorly drained to very poorly drained soils formed in recent alluvium. They are on flood plains of streams and are saturated at some time of the year. These soils are commonly called alluvial land. Fluvaquents are mapped in the Fluvaquents-Udifluvents complex, frequently flooded.

Fluvaquents are variable, and a typical pedon is not provided.

The solum of Fluvaquents ranges from 6 to 15 inches in thickness. Bedrock is at a depth of more than 5 feet. The content of rock fragments ranges, by volume, from 2 to 50 percent. These soils are moderately acid to neutral throughout.

The A horizon has hue of 5YR to 5Y, value of 2 to 4, and chroma of 1 or 2. Its texture ranges from silt loam to sandy loam. The A horizon is 6 to 15 inches thick.

The C horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 1 to 4. In some pedons it has hue of 5BG and 5G. The horizon has few to many, faint to distinct mottles. Its texture ranges from silty clay loam to coarse sand.

Granby Series

The Granby series consists of very deep, poorly drained to very poorly drained soils on glacial lake plains or deltas. These soils formed in water- or wind-deposited sands. Slope ranges from 0 to 2 percent.

Granby soils, the somewhat excessively drained and well drained Colonie soils, the moderately well drained Elnora soils, and the somewhat poorly drained Stafford soils formed in similar material. The very poorly drained Carlisle, Palms, and Adrian soils are associated on the same landscape as Granby soils. Carlisle soils formed in more than 51 inches of organic material. Adrian and Palms soils formed in moderately deep deposits of organic material over sandy or loamy material. The somewhat poorly drained and poorly drained Raynham and Shaker soils are also associated with Granby soils. Raynham soils formed in very deep, silty deposits, and Shaker soils are fine sandy loam overlying clay deposits.

Typical pedon of Granby loamy fine sand, in the town of Colonie, 1 mile south of the Route 155 bridge over the railroad and 225 feet southwest of the Penn Central Railroad, in a cultivated area:

Ap—0 to 11 inches; black (10YR 2/1) loamy fine sand, very dark gray (10YR 3/1) crushed and dry; weak fine granular structure; very friable; many fine roots; slightly acid; abrupt wavy boundary.

Bg—11 to 25 inches; gray (10YR 5/1) fine sand; common medium distinct brownish yellow (10YR 6/6) mottles and few fine distinct light brownish gray (10YR 6/2) mottles; weak coarse subangular blocky structure; friable; common fine roots; neutral; clear wavy boundary.

Cg—25 to 60 inches; dark gray (10YR 4/1) sand; few medium distinct yellowish brown (10YR 5/6) mottles; single grain; loose; few fine roots; neutral.

The solum ranges from 24 to 52 inches in thickness. Depth to bedrock is more than 60 inches.

The Ap horizon is neutral or has hue of 10YR. It has value of 2 or 3 and chroma of 2 or less. Its texture ranges from fine sandy loam to sand. Its reaction is moderately acid to neutral.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or less. It has few to many mottles. Its texture is fine sand, sand, loamy sand, or loamy fine sand. Its structure is weak subangular blocky or granular. Its reaction is moderately acid to neutral.

The C horizon has hue of 10YR to 5Y, value of 4 to 7, and chroma of 1 to 4. It has few to many mottles. Its texture is fine sand or sand. Its reaction is neutral to moderately alkaline.

Greene Series

The Greene series consists of moderately deep, somewhat poorly drained soils on bedrock-controlled plateaus. These soils formed in thick deposits of glacial till over interbedded sandstone and shale or siltstone bedrock. Slope ranges from 0 to 8 percent.

Greene soils are similar to the shallow Tuller soils and the shallow, somewhat excessively drained Kearsarge soils. Greene soils are also associated with

the well drained Lordstown soils and the somewhat poorly drained Angola soils. They have more mottles in the subsoil than Lordstown soils. They are more acid than Lordstown soils. Unlike Greene soils, Angola soils have clay accumulations in the subsoil.

Typical pedon of Greene channery silt loam, in an area of Tuller-Greene complex, 0 to 8 percent slopes, in the town of Westerlo, 3,000 feet north on Stewart Road from the intersection of New York Route 85 and 75 feet north of Steward Road, in a hayfield:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) channery silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; many fine roots; 15 percent rock fragments; moderately acid (limed); abrupt smooth boundary.

Bw1—8 to 15 inches; yellowish brown (10YR 5/4) channery loam; common fine and medium distinct light brownish gray (10YR 6/2) mottles and common fine faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and very fine roots; common fine and medium tubular pores; 15 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—15 to 24 inches; olive brown (2.5Y 4/4) channery silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; many fine and medium tubular pores; 25 percent rock fragments; faces of peds are light brownish gray (10YR 6/2); strongly acid; abrupt smooth boundary.

R—24 inches; gray sandstone and shale.

The solum ranges from 16 to 40 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges, by volume, from 15 to 35 percent throughout.

The Ap horizon has hue of 7.5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. Its texture is loam or silt loam in the fine earth fraction. Its structure is weak or moderate, fine or medium granular. Its reaction ranges from extremely acid to strongly acid unless the soils have been limed.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 1 to 4. It has few to many mottles. Its texture ranges from loam to silty clay loam in the fine earth fraction. Its structure is weak or moderate, medium or coarse subangular blocky. Its reaction ranges from very strongly acid to moderately acid.

Hamlin Series

The Hamlin series consists of very deep, well drained soils on flood plains. These soils formed in loamy alluvium. Slope ranges from 0 to 3 percent.

Hamlin soils are similar to Teel and Wayland soils. Unlike Teel and Wayland soils, they do not have mottles above a depth of 14 inches. Howard and Chenango soils are on nearby glacial outwash terraces and alluvial fans near Hamlin soils. Hamlin soils have more than 35 percent rock fragments in the surface layer and subsoil.

Typical pedon of Hamlin silt loam, in the town of Guilderland, on the Ed Krausse farm, 1 mile east of Normanskill Bridge on Johnston Road, 250 feet east of the road and 200 feet north, in an intermittent stream:

Ap—0 to 11 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak fine and medium granular structure; friable; common fine and very fine roots; neutral; abrupt smooth boundary.

Bw1—11 to 19 inches; dark grayish brown (10YR 4/2) silt loam; weak fine and very fine subangular blocky structure; friable; common fine roots; few fine tubular pores; mildly alkaline; abrupt wavy boundary.

Bw2—19 to 39 inches; dark brown (10YR 4/3) silt loam; weak medium and fine subangular blocky structure; friable; few fine roots in the upper part of horizon; common fine and few coarse tubular pores; mildly alkaline; gradual wavy boundary.

C1—39 to 50 inches; dark grayish brown (10YR 4/2) silt loam (60 percent) and grayish brown (10YR 5/2) silt loam (40 percent); common fine faint dark yellowish brown (10YR 4/4) mottles; massive; friable; few fine and few coarse pores; mildly alkaline; gradual wavy boundary.

C2—50 to 66 inches; grayish brown (10YR 5/2) silt loam; common fine distinct dark brown (7.5YR 4/4) mottles; massive; very friable; few fine pores; mildly alkaline.

The solum ranges from 24 to 40 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 5 percent above a depth of 40 inches and 0 to 10 percent below.

The A horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 1 to 3. Its texture is silt loam or very fine sandy loam in the fine earth fraction. Its reaction ranges from strongly acid to neutral.

The Bw horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4. Its texture is silt loam or very fine sandy loam in the fine earth fraction. Its reaction ranges from strongly acid to mildly alkaline.

The C horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4. It has fewer common mottles. Its texture is silt loam or fine sandy loam. Its reaction ranges from moderately acid to mildly alkaline.

Hornell Series

The Hornell series consists of moderately deep, somewhat poorly drained soils on bedrock-controlled landscapes. These soils formed in glacial till from sandstone and shale. Slope ranges from 0 to 15 percent.

Hornell soils and the poorly drained Allis soils formed in similar material. These soils are associated with Nassau, Nunda, and Burdett soils on nearby landscapes. Hornell soils are adjacent, where bedrock is shallow, to the somewhat excessively drained Nassau soils. Hornell soils have more clay in the subsoil and are not as deep as Nunda and Burdett soils.

Typical pedon of Hornell silt loam, 3 to 8 percent slopes, in the town of Guilderland, in a field south of Weaver Road, 252 feet east of Hawes Road, in a cultivated area:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine subangular blocky structure; friable; many fine roots; 2 percent rock fragments; slightly acid (limed); abrupt smooth boundary.

Bw1—7 to 9 inches; yellowish brown (10YR 5/4) silty clay; many medium and coarse distinct grayish brown (2.5Y 5/2) mottles; strong coarse and medium subangular blocky structure; firm, sticky; common fine roots; many fine pores; 3 percent rock fragments; moderately acid (limed); clear wavy boundary.

Bw2—9 to 17 inches; yellowish brown (10YR 5/4) silty clay; many medium and coarse distinct strong brown (7.5YR 5/8) mottles and many medium distinct dark brown (7.5YR 4/4) mottles; strong coarse prismatic structure parting to moderate medium subangular blocky; firm, sticky; common fine roots along prism faces; many fine pores; 5 percent rock fragments; light gray (5Y 6/1) films on prism faces; strongly acid; clear wavy boundary.

C—17 to 28 inches; dark grayish brown (2.5Y 4/2) very channery silty clay; many medium and coarse distinct dark brown (7.5YR 4/4) mottles and common medium and coarse distinct gray (N 5/0) mottles; massive; firm, sticky; common fine roots; common fine pores; 35 percent rock fragments; strongly acid; gradual wavy boundary.

R—28 inches; dark gray (N 4/0) soft shale bedrock; strongly acid.

The solum ranges from 17 to 36 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges, by volume, from 0 to 5 percent in the A horizon, 3 to 25 percent in the B horizon, and 15 to 60 percent in the C horizon.

The A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. Its texture is silt loam or silty clay loam in the fine earth fraction. Its structure is granular or subangular blocky. Its reaction is extremely acid to strongly acid in unlimed areas. Limed areas range to slightly acid.

The Bw horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 3 to 8. It has distinct mottles. Its texture is silty clay loam, silty clay, or clay in the fine earth fraction. Its structure is subangular blocky, angular blocky, or prismatic. Its reaction is very strongly acid to moderately acid in limed areas.

The C horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 8. Its texture is silty clay loam, silty clay, or clay in the fine earth fraction. The horizon is massive or has a platy structure. Its reaction is very strongly acid or strongly acid.

Howard Series

The Howard series consists of very deep, well drained and somewhat excessively drained soils on outwash plains, kames, and terraces. These soils formed in glacial outwash derived mainly from sandstone, limestone, shale, and some granitic rocks. Slope ranges from 0 to 8 percent.

Howard soils, the moderately well drained Castile soils, and the somewhat poorly drained Rhinebeck soils formed in similar material. Chenango, Castile, Farmington, and Hamlin soils are on landscapes near Howard soils. Unlike Chenango and Castile soils, Howard soils have an argillic horizon. Howard soils are deeper and more gravelly than the shallow Farmington soils. Hamlin soils are on flood plains, and Howard soils are in the areas above the flood plains.

Typical pedon of Howard gravelly silt loam, rolling, in the town of Bethlehem, 1,600 feet east of the intersection of County Route 102 and Rupert Road and 600 feet south on Rupert Road, 10 feet from a cut on the east side of a gravel pit:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) gravelly silt loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many fine and medium roots and few coarse roots; 25 percent rock fragments; slightly acid; clear irregular boundary.

E—8 to 17 inches; brown (10YR 5/3) very gravelly silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; 50 percent rock fragments; moderately acid; gradual wavy boundary.

B/E—17 to 29 inches; the B material is dark yellowish brown (10YR 4/4) and the E material is pale brown

(10YR 6/3) very gravelly loam; weak fine and medium subangular blocky structure; friable; few fine roots; many earthworm channels; 50 percent rock fragments; strongly acid; clear irregular boundary.

Bt1—29 to 39 inches; dark brown (10YR 4/3) very gravelly sandy clay loam; weak fine subangular blocky structure; friable; common fine roots; many fine to coarse pores; thin clay films in pores; 50 percent rock fragments; moderately acid; gradual wavy boundary.

Bt2—39 to 53 inches; 8 percent dark brown (10YR 3/3) and 20 percent dark yellowish brown (10YR 4/4) very gravelly sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common medium pores that have thin clay linings; 60 percent rock fragments; slightly acid; gradual wavy boundary.

BC—53 to 67 inches; dark yellowish brown (10YR 4/4) very gravelly sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; common very fine pores; common interstices; 60 percent rock fragments; mildly alkaline; gradual wavy boundary.

2C—67 to 75 inches; very dark grayish brown (10YR 3/2) fine and very fine gravel; yellowish brown (10YR 5/6) very fine silt coatings on the gravel; single grain; loose; few fine roots; common interstices; moderately alkaline.

Thickness of the solum and depth to carbonates range from 24 inches to more than 60 inches. The content of rock fragments ranges, by volume, from 25 to 35 percent in the surface layer and from 30 to 60 percent throughout the subsoil.

The Ap horizon has hue of 7.5YR to 10YR, value of 3 to 5, and chroma of 2 or 3. Its texture ranges from sandy loam to silt loam in the fine earth fraction. Reaction ranges from strongly acid to neutral.

The E horizon has hue of 7.5YR to 10YR, value of 4 to 6, and chroma of 2 or 3. Its texture ranges from sandy loam to silt loam in the fine earth fraction. Its reaction ranges from strongly acid to neutral.

The B/E and E/B horizons have hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 to 4. Its texture ranges from silt loam to sandy loam or sandy clay loam in the fine earth fraction. Its reaction ranges from strongly acid to neutral.

The Bt horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 or 4. Its texture ranges from silt loam to sandy clay loam in the fine earth fraction. Its reaction ranges from strongly acid to neutral.

The BC horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4. Its texture ranges from silt loam to sandy clay loam in the fine earth fraction. Its reaction ranges from neutral to moderately alkaline.

The 2C horizon has hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 4. It consists of fine or very fine gravel. Its reaction ranges from neutral to moderately alkaline.

Hudson Series

The Hudson series consists of very deep, moderately well drained soils on glacial lake plains. These soils formed in glacial lake deposits of silt and clay. Slope ranges from 3 to 45 percent.

Hudson soils, the somewhat poorly drained Rhinebeck soils, and the poorly drained and very poorly drained Madalin soils formed in similar material. Unadilla, Scio, Colonie, Claverack, and Nassau soils are on landscapes near Hudson soils. Hudson soils have more lacustrine clay in the subsoil and substratum than Unadilla and Scio soils. Unlike Hudson soils, Colonie and Claverack soils have deposits of loamy fine sand in the solum and substratum. Unlike Hudson soils, Nassau soils have bedrock within the control section.

Typical pedon of Hudson silt loam, 3 to 8 percent slopes, in the town of Bethlehem, 75 yards north of New York Route 32 and 250 feet west of the junction of Meads Lane, under a power line:

Ap—0 to 8 inches; dark brown (10YR 4/3) silt loam; moderate fine granular structure; very friable; many fine roots; slightly acid; abrupt smooth boundary.

E—8 to 11 inches; brown (10YR 5/3) silt loam; few fine faint yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; very friable; many fine roots; many fine pores; strongly acid; clear wavy boundary.

B/E—11 to 16 inches; brown (7.5YR 4/2) silty clay loam (B part); strong fine and medium subangular blocky structure; firm, slightly sticky; common fine roots; few fine pores; brown (10YR 5/3) and light gray (10YR 7/2) silt coatings on faces of peds (E part); discontinuous thin clay on faces of peds and pores; moderately acid; clear wavy boundary.

Bt—16 to 31 inches; brown (7.5YR 4/2) silty clay; few fine faint brown (7.5YR 5/4) mottles; weak very coarse prismatic, parting to strong medium and coarse subangular blocky; firm; few fine roots; few fine pores; thin clay films on faces of peds; neutral; gradual wavy boundary.

C—31 to 60 inches; brown (7.5YR 4/2) varved clay that has thin lamina of silt; slightly firm; weakly effervescent; moderately alkaline.

The solum ranges from 20 to 60 inches in thickness. Depth to carbonates ranges from 20 to 70 inches.

Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 5 percent in the surface layer and subsurface layer and from 0 to 10 percent in the subsoil and substratum.

The A horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 2 or 3. Its texture is silt loam or silty clay loam in the fine earth fraction. Its structure is weak to strong fine or medium granular. Its reaction is strongly acid to neutral.

The E horizon has hue of 7.5YR to 5Y, value of 5 or 6, and chroma of 2 or 3. In some pedons, it is faintly mottled. It ranges from silt loam to silty clay loam in the fine earth fraction. Its structure is weak or moderate subangular blocky. Its reaction is strongly acid to neutral.

The B/E horizon has a range of characteristics similar to those of the Bt horizon in the B part and to those of the E horizon in the E part. In some pedons the B/E horizon has mottles.

The Bt horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4. Its texture is silty clay or silty clay loam in the fine earth fraction. Its structure is moderate or strong, medium or coarse angular or subangular blocky or, in some pedons, coarse or very coarse prismatic. Its reaction is moderately acid to mildly alkaline.

The C horizon has hue of 5YR to 5Y, value of 3 to 5, and chroma of 1 to 3. Its texture ranges from silt loam to clay in the fine earth fraction. The structure is platy in areas where it is inherited from varves, or the horizon is massive. Reaction is neutral to moderately alkaline.

Hydraquents

Hydraquents consist of deep, very poorly drained mineral soils. These soils are ponded with water most of the year and make up the mineral part of freshwater marshes. These level soils are in depressions and are adjacent to natural or manmade lakes, ponds, and other bodies of open water.

Hydraquents are variable, and a typical pedon description is not provided.

Depth to the mineral soil deposits is more than 60 inches. Depth to bedrock is more than 5 feet. The content of rock fragments ranges, by volume, from 0 to 35 percent. Reaction ranges from strongly acid to neutral.

Typically, these soils have hue of 7.5YR to 2.5Y, value of 3 to 7, and chroma of 1 or 2. Their texture in the fine earth fraction ranges from silty clay loam to loamy very fine sand and is coarser below a depth of 40 inches.

Ilion Series

The Ilion series consists of very deep, poorly drained soils in depressional areas on till plains. These soils formed in glacial till deposits derived from black and gray shale. Slope ranges from 0 to 3 percent.

Ilion, Nunda, and Burdett soils formed in similar material. Ilion soils, however, are darker colored in the surface layer and are more gray in the B and C horizons. Madalin, Birdsall, and Angola soils are on landscapes near Ilion soils. Ilion soils generally have less clay than Madalin soils and more clay than Birdsall soils. Both Madalin and Birdsall soils formed in lacustrine deposits. Angola soils are moderately deep to shale bedrock.

Typical pedon of Ilion silt loam, in the town of Guilderland, 3,200 feet south of County Route 201 and 2,200 feet east of Hennessey Road in a depression, 150 feet west of Gipp's farm road:

Ap—0 to 8 inches; black (10YR 2/1) silt loam, gray (10YR 5/1) dry; common fine distinct dark brown (7.5YR 3/4) mottles; moderate fine subangular blocky structure; friable; many fine roots; neutral; clear irregular boundary.

E—8 to 12 inches; dark grayish brown (10YR 4/2) silt loam; common fine distinct dark brown (7.5YR 3/4) mottles; moderate medium prismatic structure parting to moderate fine subangular blocky; friable; many fine roots; neutral; gradual irregular boundary.

Btg1—12 to 26 inches; gray (10YR 5/1) silty clay loam; many medium distinct yellowish brown (10YR 5/8) mottles; strong fine and medium subangular blocky structure; firm; few fine roots; thick clay films on faces of peds; 10 percent rock fragments; neutral; gradual smooth boundary.

Btg2—26 to 32 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; weak medium angular blocky structure; firm; thick clay films on faces of peds; few fine pores; 10 percent rock fragments; neutral; gradual wavy boundary.

2C—32 to 60 inches; grayish brown (10YR 5/2) gravelly silt loam; massive; firm; 20 percent rock fragments; very slightly effervescent at a depth of 43 inches; mildly alkaline.

The solum ranges from 24 to 40 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 20 percent in the upper part of the solum and from 10 to 35 percent in the lower part of the solum and in the substratum.

The A horizon has hue of 10YR or 2.5Y, value of 2

or 3, and chroma of 1 or 2. Its texture is silt loam, loam, or silty clay loam in the fine earth fraction. Its structure is moderate fine or medium granular or subangular blocky. Its reaction is moderately acid to neutral.

The E horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2. It is mottled. It is silty clay loam, silt loam, or loam in the fine earth fraction. Its reaction is moderately acid to neutral.

The B horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 or 2. It is mottled. It is clay loam or silty clay loam in the fine earth fraction. Its structure is strong to weak, fine or medium angular or subangular blocky. Its reaction is moderately acid to mildly alkaline.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 1 to 3. It is loam, silt loam, or silty clay loam in the fine earth fraction. It is massive or has platy structure. Reaction is mildly alkaline or moderately alkaline.

Kearsarge Series

The Kearsarge series consists of shallow, somewhat excessively drained soils on uplands. These soils formed in channery glacial till deposits derived from siltstone, sandstone, and shale. Slope ranges from 0 to 8 percent.

Kearsarge, Arnot, Greene, and Tuller soils formed in similar parent material. Kearsarge soils have fewer rock fragments than Arnot soils. Unlike Kearsarge soils, Green and Tuller soils have reddish and grayish mottles in the B horizon. Kearsarge soils are near the moderately deep Lordstown and Angola soils.

Typical pedon of Kearsarge silt loam, 0 to 8 percent slopes, in the town of Berne, approximately ¼ mile north of the intersection of County Routes 1 and 2, about 2,145 feet east of County Route 2 on a private road (Helderburg Bluestone Quarry), about 700 feet south of the private road, in an open field next to the quarry:

Ap—0 to 8 inches; brown (10YR 4/3) silt loam; weak medium subangular blocky structure parting to weak fine granular; friable; many fine and medium roots; 10 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw—8 to 15 inches; dark yellowish brown (10YR 4/4) channery silt loam; weak medium platy structure parting to moderate medium subangular blocky; friable; common fine and few medium roots; 20 percent rock fragments; strongly acid; clear smooth boundary.

C—15 to 18 inches; yellowish brown (10YR 5/4) channery silt loam; weak medium platy structure parting to moderate medium subangular blocky; firm; common fine roots; many fine pores; 25 percent rock fragments; strongly acid; abrupt smooth boundary.

2R—18 inches; dark gray (5Y 4/1) fractured siltstone bedrock.

The thickness of the solum and the depth to bedrock range from 10 to 20 inches. Rock fragments, dominantly siltstone, make up, by volume, 3 to 15 percent of the surface layer and 15 to 30 percent of the subsoil and substratum.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. It is silt loam or loam in the fine earth fraction. Structure is weak fine granular or weak medium subangular blocky. Reaction is very strongly acid to moderately acid.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. It is silt loam or loam in the fine earth fraction. Structure is weak medium platy or moderate medium subangular blocky. Reaction is very strongly acid to moderately acid.

The C horizon has hue of 10YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is silt loam or loam in the fine earth fraction. Structure is weak medium platy or weak medium subangular blocky. Reaction is very strongly acid to moderately acid. Some pedons do not have a C horizon.

The R horizon ranges from siltstone or sandstone to interbedded shale and siltstone.

Lackawanna Series

The Lackawanna series consists of very deep, well drained soils on till plains. These soils formed in glacial till deposits derived from reddish sandstone, siltstone, and shale. Slope ranges from 3 to 35 percent.

Lackawanna soils are similar to Wellsboro soils and are commonly adjacent to Wellsboro and Morris soils. Wellsboro soils are moderately well drained. Morris soils are somewhat poorly drained. The moderately well drained Nunda soils and the well drained Lordstown and Oquaga soils are on landscapes near Lackawanna soils. Lackawanna soils have less clay in the subsoil than Nunda soils. Lordstown and Oquaga soils are moderately deep to bedrock.

Typical pedon of Lackawanna channery silt loam, 8 to 15 percent slopes, in the town of Rensselaerville, approximately ½ mile north of County Route 353 and about 225 feet west of County Route 10:

Ap—0 to 10 inches; dark brown (7.5YR 3/2) channery silt loam, pinkish gray (7.5YR 6/2) dry; weak fine granular structure; very friable; many fine roots; 15 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw1—10 to 17 inches; dark reddish brown (5YR 3/4)

channery silt loam; very weak fine subangular blocky structure parting to weak medium granular; very friable; common fine pores; common fine roots; 20 percent rock fragments; strongly acid; clear wavy boundary.

Bw2—17 to 25 inches; reddish brown (5YR 4/3) channery loam; weak medium subangular blocky structure; very friable; common fine pores; common fine roots; 15 percent rock fragments; strongly acid; clear wavy boundary.

Bx—25 to 52 inches; weak red (2.5YR 4/2) very channery silt loam; weak very coarse prismatic structure parting to weak fine and medium subangular blocky; very firm in place; brittle; few fine roots; 35 percent rock fragments; three silt streaks ⅛ to ⅜ inch wide with light brownish gray (10YR 6/2) center and strong brown (7.5YR 5/8) borders, 6 to 8 inches apart and running full length of the horizon; strongly acid; diffuse wavy boundary.

C—52 to 60 inches; weak red (2.5YR 4/2) very channery loam; massive; firm in place; 35 percent rock fragments; moderately acid.

The solum ranges from 40 to 75 inches or more in thickness. Depth to bedrock is 60 inches or more. Depth to the fragipan ranges from 17 to 36 inches. Rock fragments make up, by volume, 15 to 35 percent above the fragipan and as much as 50 percent in the fragipan and C horizon.

The Ap horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 to 4. Some undisturbed pedons have a thin, dark reddish brown (5YR 2/2) to dark grayish brown (10YR 4/2) A1 horizon and a thin dark reddish brown (5YR 3/2) to pale brown (10YR 6/3) A2 horizon. Texture of the horizon is silt loam in the fine earth fraction. Structure is weak fine granular. Consistence is friable or very friable. Reaction is very strongly acid or strongly acid.

The Bw horizon has hue of 2.5Y to 10YR, value of 3 to 5, and chroma of 3 to 6. Its texture ranges from sandy loam to silt loam in the fine earth fraction. Its structure is subangular blocky. Its consistence is friable or very friable. Its reaction is very strongly acid or strongly acid.

The Bx horizon is similar to the Bw horizon in color, and in some pedons it is mottled. It is sandy loam to silt loam in the fine earth fraction. Its structure is very coarse or coarse prismatic parting to subangular blocky. Its consistence is very firm and brittle. Its reaction is very strongly acid to moderately acid.

The C horizon is similar to the Bx horizon in color and texture. Its reaction ranges from very strongly acid to moderately acid.

Lordstown Series

The Lordstown series consists of moderately deep, well drained soils on bedrock-controlled uplands. These soils formed in channery glacial till deposits derived from siltstone and sandstone. Slope ranges from 0 to 45 percent.

Lordstown soils, the shallow Kearsarge and Arnot soils, and the somewhat poorly drained Tuller and Greene soils formed in similar material. Valois, Nunda, and Chenango soils are associated with Lordstown soils on nearby landscapes. Valois, Nunda, and Chenango soils are very deep to bedrock. Lordstown soils have less clay in the subsoil than Nunda soils.

Typical pedon of Lordstown channery silt loam, 3 to 8 percent slopes, in the town of Rensselaerville, 80 feet southeast of New York Route 85 and about 1½ miles northeast of Rensselaerville, in a borrow pit:

Ap—0 to 6 inches; very dark grayish brown (10YR 3/2) channery silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many fine roots; 20 percent rock fragments; very strongly acid; abrupt smooth boundary.

Bw1—6 to 9 inches; strong brown (7.5YR 5/6) channery silt loam; weak fine granular structure; very friable; many fine roots; 20 percent rock fragments; very strongly acid; clear wavy boundary.

Bw2—9 to 13 inches; strong brown (7.5YR 5/6) channery silt loam; weak fine granular structure; very friable; many fine roots; 20 percent rock fragments; very strongly acid; clear wavy boundary.

Bw3—13 to 30 inches; light olive brown (2.5Y 5/4) channery silt loam; weak fine subangular blocky structure parting to weak fine granular; very friable; common fine roots; 20 percent rock fragments; very strongly acid; abrupt wavy boundary.

R—30 inches; interbedded sandstone bedrock with shale.

The thickness of the solum and the depth to bedrock range from 20 to 40 inches. Rock fragments, dominantly flat, angular fragments and flagstones, make up, by volume, 10 to 35 percent of the A horizon and 20 to 60 percent of the subsoil and substratum.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture is silt loam or loam in the fine earth fraction. Its reaction is very strongly acid to slightly acid.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Its texture is dominantly silt loam or loam in the fine earth fraction. Its reaction is very strongly acid to moderately acid.

The C horizon has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 4. It is mottled in some pedons. Its texture is dominantly silt loam but ranges to fine sandy loam in the fine earth fraction. Its reaction is moderately acid or strongly acid. Some pedons do not have a C horizon.

Madalin Series

The Madalin series consists of very deep, poorly drained and very poorly drained soils in depressions on glacial lake plains or till plains. These soils formed in glacial lake deposits of silt and clay. Slope ranges from 0 to 3 percent.

Madalin soils, the moderately well drained Hudson soils, and the somewhat poorly drained Rhinebeck soils formed in similar material. Shaker, Elmridge, and Burdett soils formed in landscapes near Madalin soils. Unlike Madalin soils, Elmridge and Shaker soils have 20 to 40 inches of fine sandy loam over clay. Unlike Madalin soils, Burdett soils formed in glacial till.

Typical pedon of Madalin silt loam, in the town of Guilderland, 25 feet east of Meadowdale Road and 100 feet north of the railroad tracks, in a formerly cultivated area:

Oi—3 to 0 inches; black (10YR 2/1) relatively undecomposed leaves and twigs; neutral; clear smooth boundary.

Ap1—0 to 7 inches; black (N 2/0) silt loam, gray (5Y 5/1) dry; few fine prominent strong brown (7.5YR 5/6) mottles; weak fine granular structure; friable; many fine and medium roots; many medium pores; neutral; clear smooth boundary.

Ap2—7 to 9 inches; very dark gray (10YR 3/1) silt loam; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; slightly firm, slightly plastic; few fine roots; many medium pores; neutral; abrupt smooth boundary.

Btg1—9 to 17 inches; gray (10YR 5/1) silty clay loam; many medium prominent strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky; few fine roots; many medium pores; continuous prominent clay films on horizontal and vertical faces of peds; neutral; clear smooth boundary.

Btg2—17 to 23 inches; gray (5Y 5/1) silty clay loam; many coarse prominent strong brown (7.5YR 5/6) mottles; weak fine subangular blocky structure; firm; few fine roots; common fine pores; clay skins in pores more than 1 mm thick (but not as prevalent as in the Btg1 horizon); neutral; clear smooth boundary.

Btg3—23 to 30 inches; dark gray (5Y 4/1) silty clay; common medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure parting to weak fine subangular blocky; firm; few fine roots; clay skins in root channels; few fine pores; neutral; clear smooth boundary.

Cg1—30 to 34 inches; gray (5Y 5/1) silty clay loam; few fine distinct yellowish brown (10YR 5/6) mottles and a smear of dusky red (2.5YR 3/2) organic matter; massive; weakly varved; firm; few fine roots; neutral; clear smooth boundary.

Cg2—34 to 60 inches; very dark gray (5Y 3/1) silty clay; common medium prominent strong brown (7.5YR 5/6) mottles; massive; weakly varved; firm; few fine roots; neutral.

The solum ranges from 24 to 48 inches in thickness. Depth to carbonates ranges from 24 to 60 inches. The content of rock fragments ranges, by volume, from 0 to 2 percent in the solum and from 0 to 20 percent in the C horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 2 or 3, and chroma of 0 to 2. Its texture ranges from silt loam to silty clay loam in the fine earth fraction. Its structure is weak or moderate granular or subangular blocky. Its reaction ranges from moderately acid to mildly alkaline.

The Btg horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 6. It has common to many, prominent mottles. Chroma of 2 or less is dominant in more than 60 percent of the soil between the base of the Ap horizon and a depth of 30 inches. Texture of the Btg horizon is silty clay and silty clay loam in the fine earth fraction. Reaction ranges from moderately acid to mildly alkaline.

The C horizon is neutral or has hue of 7.5YR to 5Y. It has value of 3 to 5 and chroma of 0 to 3. Its texture is silty clay loam or silty clay in the fine earth fraction. Its reaction ranges from neutral to mildly alkaline.

Manlius Series

The Manlius series consists of moderately deep, well drained to somewhat excessively drained soils on bedrock-controlled landforms on uplands. These soils formed in glacial till deposits. Slope ranges from 3 to 35 percent.

Manlius soils are near Nassau, Tuller, Greene, and Angola soils. Unlike Manlius soils, Nassau soils are shallow to bedrock. Unlike Manlius soils, the somewhat poorly drained Tuller, Greene, and Angola soils have mottling and gray colors in the subsoil.

Typical pedon of Manlius channery silt loam, 8 to 15 percent slopes, in the town of Guilderland, 50 feet east

of Dunnsville Road and 100 feet south of the Schenectady County line:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) channery silt loam; light brownish gray (10YR 6/2) dry; weak fine and medium granular structure; slightly hard; many fine roots; 15 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw1—8 to 13 inches; brown (10YR 4/3) channery silt loam, pale brown (10YR 6/3) dry; weak medium and coarse granular structure parting to fine granular; slightly hard; common fine and medium roots; 30 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—13 to 20 inches; brown (10YR 4/3) very channery silt loam; weak fine and medium subangular blocky structure; slightly hard; few fine roots; 45 percent rock fragments; moderately acid; clear wavy boundary.

C—20 to 24 inches; dark grayish brown (10YR 4/2) very channery silt loam; very weak medium subangular blocky structure; hard; few fine roots; 60 percent rock fragments; brown (7.5YR 4/4) weathered shale; gray (N 5/0) silt coatings on shale; strongly acid; clear wavy boundary.

R—24 inches; very dark grayish brown (2.5Y 3/2) highly weathered, thinly bedded shale; easily dug with spade; silt coatings on shale surfaces are brown (10YR 4/3), dark grayish brown (2.5Y 4/2), and grayish brown (2.5Y 5/2); moderately acid when pulverized.

The solum ranges from 15 to 30 inches in thickness. The depth to bedrock ranges from 20 to 40 inches. Rock fragments, dominantly shale and some sandstone, range, by volume, from 15 to 40 percent in the Ap horizon and from 30 to 60 percent in the B and C horizons.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam or loam in the fine earth fraction. Its reaction ranges from extremely acid to moderately acid.

The Bw horizon has hue of 10YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Its texture is silt loam or loam in the fine earth fraction. Its reaction ranges from very strongly acid to moderately acid.

Medihemists

Medihemists consist of deep, very poorly drained soils that formed in organic matter. Water is ponded on these soils most of the year, and they are the muck or peat parts of fresh marshes. These level soils are in depressions and are adjacent to natural or manmade lakes, ponds, and other bodies of open water.

Medihemists are variable, and a typical pedon is not provided.

Depth of organic material over loamy material ranges from 16 to 60 inches or more. Depth to bedrock is more than 5 feet. Woody fragments, such as twigs, branches, logs, or stumps, are scattered throughout the profile. They make up 15 to 30 percent of the volume of some pedons. Reaction is strongly acid to mildly alkaline in the organic deposits and slightly acid to moderately alkaline in the mineral material.

The organic material is neutral or has hue of 5YR to 10YR. It has value of 2 or 3 and chroma of 0 to 3. It is dominantly hemic, but in some pedons it has thin layers of sapric and fibric material. The mineral material has hue of 7.5YR to 2.5Y, value of 4 to 7, and chroma of 1 or 2. Texture ranges from loamy sand to silty clay loam. Some pedons do not have mineral material.

Middlebury Series

The Middlebury series consists of very deep, somewhat poorly drained soils on level or nearly level flood plains. These soils formed in recently deposited alluvium from nearby overflowing streams. Slope ranges from 0 to 3 percent.

Middlebury soils, the well drained Tioga soils, and the poorly drained and very poorly drained Wayland soils formed in similar material. Hudson, Scio, Unadilla, and Elmridge soils are on landscapes near Middlebury soils but above flood plains. Middlebury soils have less clay in the subsoil than Hudson soils and have a grayer and more mottled subsoil than Scio, Unadilla, and Elmridge soils. Also, unlike Middlebury soils, Elmridge soils have contrasting deposits of fine sandy loam over silty loam.

Typical pedon of Middlebury silt loam, in the town of Berne, 1,450 feet south on County Route 1 from the intersection with County Route 13 and 280 feet east of County Route 1, in a cornfield:

Ap—0 to 9 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; friable; common fine roots; 5 percent rock fragments; neutral; clear wavy boundary.

Bw1—9 to 17 inches; very dark grayish brown (10YR 3/2) mixed with brown (10YR 5/3) silt loam; weak fine subangular blocky structure; friable; common fine roots; few fine tubular pores; neutral; abrupt smooth boundary.

Bw2—17 to 28 inches; brown (10YR 4/3) silt loam; common fine grayish brown (10YR 5/2) and light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable;

common fine roots; common medium tubular pores; 5 percent rock fragments; neutral; abrupt smooth boundary.

2BC—28 to 42 inches; dark grayish brown (10YR 4/2) gravelly loam; common fine grayish brown (10YR 5/2) mottles; weak fine subangular blocky structure; friable; few fine tubular pores; 20 percent rock fragments; neutral; abrupt smooth boundary.

2C—42 to 70 inches; dark gray (10YR 4/1) and grayish brown (10YR 5/2) stratified very gravelly sand; single grain; loose; 40 percent rock fragments; neutral.

The solum ranges from 15 to 45 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 15 percent in the surface layer, 0 to 20 percent in the subsoil, and 0 to 50 percent in the substratum. Reaction ranges from strongly acid to neutral in the surface layer and moderately acid to neutral in the subsoil and substratum.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Its texture ranges from fine sandy loam to silt loam. Its structure is weak or moderate fine to coarse granular or subangular blocky. Its consistence is friable or very friable.

The B horizon has hue of 7.5YR to 5Y, value of 3 to 5, and chroma of 2 to 4. High-chroma mottles are in some profiles, and low-chroma mottles are within 24 inches of the soil surface. Texture ranges from fine sandy loam to silt loam. Structure is medium or coarse subangular blocky or prismatic. Consistence is friable or very friable.

The C horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 1 to 4. High- and low-chroma mottles are in some profiles. Texture ranges from fine sandy loam to silt loam above a depth of 40 inches and ranges from sandy loam to stratified sand and gravel below a depth of 40 inches. Consistence is loose to firm.

Morris Series

The Morris series consists of very deep, somewhat poorly drained soils on uplands. These soils formed in glacial till deposits mainly from reddish sandstone, siltstone, and shale. Slope ranges from 3 to 15 percent.

Morris soils are similar to Lackawanna and Wellsboro soils. Lackawanna soils are well drained and Wellsboro soils are moderately well drained. Morris soils are adjacent to Tuller, Greene, Angola, and Busti soils. Tuller soils are shallow to bedrock, and Greene and Angola soils are moderately deep to bedrock. Morris soils have a fragipan and are redder than Busti soils.

Typical pedon of Morris channery silt loam, 3 to 8 percent slopes, in the town of Rensselaerville, 40 feet east of County Route 360, about 600 feet north of a trailer and southeast of a house, and 1.5 miles south of County Route 359:

Ap—0 to 12 inches; dark brown (7.5YR 4/2) channery silt loam; weak fine granular structure; friable; many fine roots; 20 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw—12 to 16 inches; reddish gray (5YR 5/2) channery silt loam; many medium distinct strong brown (7.5YR 5/6) and few medium distinct dark brown (7.5YR 4/4) mottles; weak fine subangular blocky structure; slightly firm; few fine roots; few fine pores; moderately acid; 25 percent rock fragments; clear smooth boundary.

Bx1—16 to 31 inches; weak red (2.5YR 4/2) channery silt loam; few medium distinct gray (10YR 6/1) mottles; weak coarse platy structure parting to weak fine subangular blocky; extremely firm and brittle; 30 percent rock fragments; few fine pores; strongly acid; gradual wavy boundary.

Bx2—31 to 60 inches; weak red (2.5YR 4/2) channery silt loam; few fine faint gray (5YR 5/1) mottles; weak fine subangular blocky structure; few fine pores; extremely firm and brittle; some patchy clay skins on ped surfaces; 30 percent rock fragments; strongly acid.

The solum ranges from 40 to 75 inches or more in thickness. Depth to the fragipan ranges from 10 to 22 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 15 to 35 percent in the A, Bw, and Bx horizons.

The Ap horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 1 to 4. It is silt loam or loam in the fine earth fraction and has a fine granular structure. Its reaction ranges from very strongly to moderately acid.

The Bw horizon has hue of 5YR to 10YR, value of 3 to 6, and chroma of 2 to 6. It is silt loam or loam in the fine earth fraction and has subangular blocky structure. Reaction ranges from very strongly to moderately acid.

The Bx horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 2 to 6. Its texture is silt loam, loam, or silty clay loam. Its structure is prismatic, platy, or blocky. Its reaction is very strongly acid to moderately acid in the upper part and strongly acid to slightly acid in the lower part. The horizon is extremely firm and brittle.

Nassau Series

The Nassau series consists of shallow, somewhat excessively drained soils on bedrock-controlled landforms. These soils formed in a thin mantle of glacial

till over folded or weathered shale bedrock. Slopes are complex and range from 3 to 25 percent.

Nassau soils are near Manlius, Tuller, Greene, Hornell, Allis, and Angola soils. Manlius soils are moderately deep to bedrock. Unlike Nassau soils, Tuller, Greene, Hornell, Allis, and Angola soils have low-chroma mottles.

Typical pedon of Nassau channery silt loam, undulating, in the town of Knox, 660 feet south of New York Route 156 and about 600 feet west of County Route 254, in a shale pit:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) channery silt loam; weak fine granular structure; slightly sticky; many fine roots; few fine pores; 25 percent rock fragments; strongly acid; abrupt smooth boundary.

Bw—8 to 16 inches; yellowish brown (10YR 5/4) very channery silt loam; weak fine and medium subangular blocky structure; slightly sticky; common fine roots; few fine pores; 35 percent rock fragments; strongly acid; abrupt wavy boundary.

R—16 inches; dark gray shale bedrock.

Thickness of the solum and depth to bedrock range from 10 to 20 inches. Rock fragments, dominantly shale, range, by volume, from 10 to 50 percent in the surface horizon and from 35 to 70 percent in the subsoil. They average, by volume, at least 35 percent in the control section.

The A horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is loam, silt loam, or their channery or very channery analogs. Its reaction is strongly acid or very strongly acid.

The B horizon has hue of 7.5YR to 2.5YR, value of 4 or 5, and chroma of 3 to 6. Its texture is silt loam, loam, or their channery or very channery analogs. Its reaction is strongly acid or very strongly acid.

The thin C horizon has hue of 10YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6. Its texture is loam, silt loam, or their very channery or extremely channery analogs. Its reaction is strongly acid or very strongly acid. Some pedons do not have a C horizon.

Nellis Series

The Nellis series consists of very deep, well drained soils on uplands. These soils formed in glacial till derived mainly from limestone. Slope ranges from 8 to 15 percent.

Nellis soils are similar to Nunda, Burdett, Valois, and Farmington soils. Nellis soils are well drained, and Nunda soils are moderately well drained. Burdett soils are somewhat poorly drained and have more clay in the subsoil than Nellis soils. Nellis soils are less gravelly in the subsoil than Valois soils.

Typical pedon of Nellis silt loam, in an area of Wassaic-Nellis silt loams, rolling, very rocky, in the town of New Scotland, about 1,100 feet west of Rowe Road and about 2,300 feet southeast of Onesquethaw Creek, in a wooded area:

Ap—0 to 11 inches; dark brown (10YR 4/3) silt loam; weak fine and medium granular structure; friable; many fine and few medium and coarse roots; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—11 to 20 inches; brown (7.5YR 4/4) loam; moderate fine subangular blocky structure; friable; common fine and medium roots; common fine tubular pores; 10 percent rock fragments; slightly acid; clear wavy boundary.

Bw2—20 to 27 inches; brown (7.5YR 4/4) channery loam; moderate fine and medium subangular blocky structure; friable; common fine and few medium roots; common medium and fine tubular pores; 15 percent rock fragments; neutral; clear smooth boundary.

BC—27 to 36 inches; yellowish brown (10YR 5/4) channery loam; moderate medium and fine subangular blocky structure; friable; few fine roots; common fine and medium vesicular pores; 20 percent rock fragments; neutral; clear wavy boundary.

C1—36 to 45 inches; dark grayish brown (10YR 4/2) channery loam; few fine faint yellowish brown (10YR 5/4) mottles; massive; friable; few fine roots; common fine vesicular pores; 25 percent rock fragments; weakly effervescent; moderately alkaline; clear irregular boundary.

C2—45 to 65 inches; brown (10YR 5/3) very channery loam; few fine faint light yellowish brown (10YR 6/4) mottles; massive; friable; few fine roots in upper part; 35 percent rock fragments; strongly effervescent; moderately alkaline.

Thickness of the solum and depth to carbonates is about 15 to 36 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 35 percent in the A and B horizons and from 5 to 50 percent in the C horizon.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 or 4, and chroma of 2 or 3. It ranges from fine sandy loam to silt loam in the fine earth fraction. Its structure is weak to moderate, medium or fine granular. Its consistence is friable or very friable. Its reaction ranges from moderately acid to neutral.

The B horizon has hue of 7.5YR to 2.5Y, value of 3

to 5, and chroma of 2 to 4. In some pedons faint mottles are at the contact between the B and C horizons. Texture ranges from silt loam to fine sandy loam in the fine earth fraction. Consistence is friable or very friable. Reaction ranges from moderately acid to mildly alkaline.

The C horizon has hue of 10YR to 5Y, value of 3 to 7, and chroma of 2 to 6. It is sandy loam, fine sandy loam, or loam in the fine earth fraction. It is mildly alkaline or moderately alkaline.

Nunda Series

The Nunda series consists of very deep, moderately well drained soils on uplands. These soils generally are on the tops and sides of hills and along valley sides. They formed in a thin silty mantle over glacial till derived from clayey shale. Slope ranges from 3 to 35 percent.

Nunda soils and the somewhat poorly drained Burdett soils formed in similar material. The poorly drained Ilion soils were mapped in the same catena as Nunda soils but do not have the silty surface mantle. Also, the moderately deep, moderately well drained and somewhat poorly drained Hornell soils and the poorly drained and very poorly drained Allis soils are near Nunda soils. The somewhat poorly drained Busti soils and the moderately well drained Chatauqua soils are associated with Nunda soils. Busti and Chatauqua soils formed in less compact glacial till deposits than Nunda soils and do not have an accumulation of clay in the subsoil.

Typical pedon of Nunda silt loam, 8 to 15 percent slopes, in the town of New Scotland, on the Fugliene Farm, 1,300 feet east-northeast of the intersection of Clipp and Hurst Roads and 660 feet north of the intersection of Diamond Hill Road and Hurst Road:

Ap—0 to 10 inches; dark brown (10YR 4/3) silt loam; moderate fine and medium granular structure; friable; many fine and few medium roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

E—10 to 16 inches; yellowish brown (10YR 5/4) to light yellowish brown (10YR 6/4) silt loam; weak fine platy structure; friable; common fine roots; few medium vesicular and common fine tubular pores; 10 percent rock fragments; neutral; abrupt wavy boundary.

2E/B—16 to 20 inches; pale brown (10YR 6/3) silt loam (E part) and brown (10YR 4/3) silt loam (B part); many fine and medium faint yellowish brown (10YR 5/6) mottles and common medium and coarse distinct light brownish gray (2.5Y 6/2) mottles; weak medium and coarse subangular blocky structure; firm; few fine roots; few medium vesicular and common fine tubular pores; 10 percent rock fragments; moderately acid; clear wavy boundary.

2Bt/E—20 to 28 inches; brown (10YR 4/3) silt loam (B part) and pale brown (10YR 6/3) silt loam (E part); many fine and medium distinct brown (7.5YR 5/4) mottles, many fine and medium faint yellowish brown (10YR 5/6) mottles, and common medium and coarse distinct light brownish gray (2.5Y 6/2) mottles; weak medium and coarse subangular blocky structure; firm; few fine roots; few thin faint clay films in pores; common faint clay films on faces of peds; 10 percent rock fragments; moderately acid; clear wavy boundary.

2Bt—28 to 44 inches; dark grayish brown (10YR 4/2) to very dark grayish brown (10YR 3/2) silty clay loam; gray (10YR 5/1) and light gray (10YR 6/1) ped faces; common fine and medium faint yellowish brown (10YR 5/4 and 5/6) mottles; weak medium subangular blocky structure; firm; few fine roots; few fine and common medium pores lined with clay; patchy thick distinct clay skins on faces of peds; 10 percent rock fragments; neutral; clear wavy boundary.

2C—44 to 64 inches; dark grayish brown (10YR 4/2) to very dark grayish brown (10YR 3/2) clay loam; common faint brown (10YR 5/3) mottles; massive; firm; 10 percent rock fragments; mildly alkaline.

The solum ranges from 30 to 45 inches in thickness. Depth to carbonates is 36 to 72 inches. Bedrock is more than 6 feet. The content of rock fragments ranges from 10 to 25 percent throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture is silt loam. Its structure is moderate medium or fine granular. Its consistence is friable. Its reaction is strongly acid to neutral.

The 2E/B and 2B/E horizons have hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 2 to 6. They are mottled. Texture of the 2E/B horizon is silt loam, loam, or fine sandy loam in the fine earth fraction; that of the 2B/E horizon is silty clay loam in the fine earth fraction. Both horizons have weak medium and coarse subangular blocky structure. Their reaction is strongly acid to neutral.

The 2Bt horizon has hue of 10YR to 2.5Y, value of 3 to 6, and chroma of 1 to 4, and it is mottled. Its texture is silty clay loam, clay loam, or loam. Its structure is weak or moderate, medium to coarse prismatic or subangular blocky. Its consistence is firm. Its reaction is moderately acid to neutral.

The 2C horizon has hue of 10YR or 2.5Y, value of 3

or 4, and chroma of 2 or 3. Its texture is silty clay loam or clay loam. The horizon is massive, and consistence is firm. Reaction ranges from slightly acid to mildly alkaline.

Oquaga Series

The Oquaga series consists of moderately deep, well drained to somewhat excessively drained soils on bedrock-controlled landforms on uplands. These soils formed in a thin mantle of glacial till deposits over reddish sandstone, siltstone, and shale. Bedrock is at a depth of 20 to 40 inches. Slope ranges from 3 to 25 percent.

Oquaga, Arnot, Lordstown, Manlius, and Chenango soils formed in similar material. Arnot soils have bedrock at a depth of less than 20 inches. In Lordstown soils, rock fragments make up, by volume, less than 35 percent of the control section. In Manlius soils, coarse fragments are dominantly gray shale. Chenango soils formed in outwash and have bedrock at a depth of more than 60 inches.

Typical pedon of Oquaga channery silt loam, 8 to 15 percent slopes, in the township of Rensselaerville, at the intersection of County Road 360 and Hale Road, on the edge of a shale pit:

Ap—0 to 8 inches; dusky red (2.5YR 3/2) channery silt loam; moderate fine and medium granular structure; friable; many fine and medium roots; 20 percent rock fragments; very strongly acid; clear smooth boundary.

Bw1—8 to 15 inches; reddish brown (2.5YR 4/4) very channery silt loam; weak fine subangular blocky structure; friable; many fine and medium roots; 40 percent rock fragments; very strongly acid; clear wavy boundary.

Bw2—15 to 25 inches; reddish brown (5YR 4/3) very channery silt loam; very weak fine and medium subangular blocky structure; very friable; common medium roots; 60 percent rock fragments; very strongly acid; clear wavy boundary.

C—25 to 30 inches; dark reddish gray (5YR 4/2) extremely channery silt loam; light yellowish brown (10YR 6/4) shale found at the bottom of the horizon; very weak thin platy structure; very friable; 65 percent rock fragments; strongly acid; abrupt smooth boundary.

R—30 inches; thick, greenish gray (5GY 5/1) siltstone over finely bedded weak red (2.5YR 4/2) shale.

The solum ranges from 15 to 35 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges, by volume, from 15 to 50 percent in the surface horizon, 25 to 60 percent in the B horizon, and 35 to 80 percent in the C horizon.

The Ap horizon has hue of 2.5Y to 7.5YR, value of 3 or 4, and chroma of 2 to 4. It is silt loam or loam in the fine earth fraction. Its structure is weak or moderate, fine or medium granular. Its consistence is friable or very friable. Its reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 2.5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is silt loam or loam in the fine earth fraction. Its structure is weak or very weak, fine or medium subangular blocky. Its consistence is friable or very friable. Its reaction is very strongly acid and moderately acid.

The C horizon has hue of 2.5YR to 7.5YR, value of 3 to 5, and chroma of 2 to 4. It is silt loam or loam in the fine earth fraction. Its reaction ranges from very strongly acid to moderately acid.

Palms Series

The Palms series consists of very deep, very poorly drained soils in swamps, marshes, and bogs within glaciated uplands and outwash plains. These soils formed in decomposed organic deposits 16 to 51 inches thick over loamy mineral layers. Slope ranges from 0 to 2 percent.

Palms soils are on landscapes similar to those of the very poorly drained Adrian and Carlisle soils. Palms soils have a silt loam or loam substratum, but Adrian soils have a sandy substratum. Carlisle soils do not have a mineral substratum within a depth of 51 inches and thus have thicker organic deposits than Palms soils. Palms soils are near the poorly drained and very poorly drained Madalin and Granby soils and the poorly drained Ilion soils. Ilion soils formed in mineral soil at the margin of the organic areas.

Typical pedon of Palms muck, in the town of Guilderland, 1,056 feet north of New York Route 156, about 400 feet east of Meadowdale Road and 249 feet south of Black Creek:

Oa1—0 to 7 inches; black (10YR 2/1) broken face and rubbed muck (sapric material); 5 percent fiber, 0 percent rubbed; massive; slightly plastic; common fine roots; dominantly herbaceous fibers, 35 percent mineral; neutral; abrupt smooth boundary.

Oa2—7 to 24 inches; black (10YR 2/1) broken face muck (sapric material); 20 percent fiber, 5 percent rubbed; massive; slightly plastic; few fine roots; dominantly herbaceous material, 20 percent mineral; neutral; clear smooth boundary.

Oa3—24 to 42 inches; very dark brown (10YR 2/2) broken face and rubbed muck (sapric material); 20 percent fiber, 5 percent rubbed; massive; slightly sticky; dominantly herbaceous material, 10 percent

mineral; neutral; abrupt smooth boundary.

2C—42 to 98 inches; dark gray (N 4/0) broken face silt loam; massive; slightly sticky and plastic; contains thin strata of woody fibers throughout; neutral.

The depth to the loamy 2C horizon ranges from 16 to 50 inches. Bedrock is more than 60 inches deep. Wood fragments range from 1/10 inch to 6 inches in diameter and make up less than 15 percent of the volume throughout.

The Oa1 horizon has hue of 10YR, value of 2, and chroma of 1 or 2. It is generally sapric material, but in some profiles sapric and hemic materials are in varying proportions. Structure is weak granular, platy, or blocky, or it is massive. Reaction ranges from strongly acid to neutral.

The Oa2 and Oa3 horizons are neutral or have hue of 5YR to 10YR. They have value of 2 or 3 and chroma of 0 to 3. Organic material is dominantly sapric; however, in some pedons hemic material is as much as 10 inches thick and fibric layers are less than 5 inches thick. These layers are generally massive. Reaction ranges from strongly acid to mildly alkaline.

The 2C horizon is neutral or has hue of 10YR to 5Y. It has value of 4 to 7 and chroma of 0 to 2. Its texture is fine sandy loam to silty clay loam. The horizon is commonly massive. Its reaction ranges from slightly acid to moderately alkaline.

Raynham Series

The Raynham series consists of very deep, poorly drained soils on lake plains. These soils formed in deposits of lacustrine silts and very fine sands. Slope ranges from 0 to 3 percent.

Raynham, Unadilla, and Scio soils formed in similar material. They were mapped in the same drainage catena. Elmridge, Stafford, and Burdett soils are on landscapes near Raynham soils. Elmridge soils are moderately well drained and formed in a thin mantle of loamy outwash or lacustrine material over clayey sediment. Stafford soils are somewhat poorly drained and formed in deep deposits of fine sands. Burdett soils are somewhat poorly drained and formed in glacial till deposits.

Typical pedon of Raynham very fine sandy loam, in the town of Bethlehem, 225 feet east of New York State Thruway and 225 feet north of Russell Road, in a brushy area:

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) very fine sandy loam, light brownish gray (10YR 6/2) dry; weak fine granular structure; very friable; many roots; neutral; abrupt wavy boundary.

Bw—11 to 13 inches; brown (10YR 5/3) very fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium platy structure; friable; many roots; many fine pores; neutral; clear wavy boundary.

Bg—13 to 24 inches; grayish brown (10YR 5/2) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles (30 percent) and few fine faint light brownish gray (10YR 6/2) mottles; weak thick to very thick platy structure parting to weak medium subangular blocky; friable; common roots; many fine pores; neutral; clear wavy boundary.

C—24 to 27 inches; brown (10YR 5/3) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6) mottles and many medium distinct strong brown (7.5YR 5/6) mottles; coarse platy structure; friable; common roots; many fine pores; neutral; clear wavy boundary.

Cg—27 to 60 inches; grayish brown (10YR 5/2) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6) mottles and many medium distinct strong brown (7.5YR 5/6) mottles; coarse platy structure; friable; few roots; common fine pores; 3 bands, 1 to 2½ inches thick, of reddish brown (5YR 5/3) silty clay; neutral.

The solum ranges from 16 to 32 inches in thickness. Depth to bedrock is more than 60 inches. Rock fragments make up less than 2 percent of the volume within a depth of 40 inches.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3. It is very fine sandy loam or silt loam. Its structure is weak fine granular. Its consistence is friable or very friable. Its reaction is strongly acid to neutral.

The B horizon generally has hue of 10YR, but the hue ranges from 7.5YR to 5Y. The horizon has value of 4 to 6 and chroma of 2 to 4. Mottles are distinct or prominent. Texture is very fine sandy loam or silt loam. Structure is weak or moderate very fine to medium blocky or weak medium platy. Consistence is very friable or friable. Reaction is strongly acid to neutral.

The C horizon generally has hue of 10YR, but the hue ranges from 7.5YR to 5Y. The horizon has value of 4 to 6 and chroma of 1 to 3. Mottles are faint to prominent. The horizon is very fine sandy loam or silt loam and, in some pedons, has thin strata of silt to fine sand. It is massive or has a platy structure. Its consistence is friable to very friable. Its reaction is moderately acid to mildly alkaline.

Rhinebeck Series

The Rhinebeck series consists of very deep, somewhat poorly drained soils that formed in silt and

clay deposits on the glacial lake plains in the eastern part of the county. Slope ranges from 0 to 8 percent.

Rhinebeck soils, the moderately well drained Hudson soils, and the poorly drained and very poorly drained Madalin soils formed in similar material. Rhinebeck soils are adjacent to the moderately well drained Scio soils, which formed in very deep silt deposits.

Typical pedon of Rhinebeck silty clay loam, 0 to 3 percent slopes, in the town of New Scotland, on the Blessing property, 1,200 feet northeast on New Scotland-South Road from the intersection with Conrail tracks, 200 feet west of the road, and 100 feet south of a hedgerow:

Ap—0 to 7 inches; dark brown (10YR 3/3) silty clay loam, pale brown (10YR 6/3) dry; weak medium and fine subangular blocky structure; parting to weak medium and fine granular; very friable; many fine and common medium roots; slightly acid; abrupt smooth boundary.

BA—7 to 11 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak fine and medium platy structure parting to weak fine subangular blocky; very friable; common fine and very fine roots; neutral; abrupt smooth boundary.

Bt1—11 to 17 inches; brown (10YR 5/3) silty clay; common fine faint yellowish brown (10YR 5/6) mottles; moderate medium and fine subangular blocky structure; friable; common fine, very fine, and coarse roots; few fine tubular pores; few thin faint yellowish brown (10YR 5/4) clay films on faces of peds; strongly acid; clear wavy boundary.

Bt2—17 to 26 inches; dark grayish brown (10YR 4/2) silty clay; light brownish gray (10YR 6/2) ped faces; common fine distinct dark yellowish brown (10YR 4/4) and brown (10YR 5/3) mottles; weak coarse prismatic structure parting to moderate medium and fine subangular blocky; firm; few fine tubular pores; common fine and very fine roots along ped faces; few patchy faint clay films on faces of peds; common very dark gray (10YR 3/1) manganese stains; moderately acid; clear wavy boundary.

BC—26 to 34 inches; dark yellowish brown (10YR 4/4) silty clay; grayish brown (10YR 5/2) ped faces; common fine faint yellowish brown (10YR 5/4) mottles; weak fine platy structure parting to weak fine blocky; firm; few fine pores in upper part of horizon; few fine roots; neutral; abrupt smooth boundary.

2C—34 to 64 inches; dark brown (10YR 3/3), dark yellowish brown (10YR 4/4), and dark grayish brown (10YR 4/2) varved silty clay; massive; firm; thin varves; coatings of dark gray (10YR 4/1) carbonate; mildly alkaline.

The solum ranges from 10 to 40 inches in thickness and averages about 30 inches. Depth to carbonates ranges from 20 to 60 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 25 percent in the surface layer and subsurface layer and from 0 to 10 percent in the subsoil and substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 2 to 4, and chroma of 1 to 4. It is silt loam or silty clay loam. Its structure is weak, medium or fine granular, subangular blocky, or platy. Its consistence is very friable or friable. Its reaction is strongly acid to neutral.

The BA horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is silt loam, very fine sandy loam, silty clay, or silty clay loam. Its structure is weak or moderate subangular blocky. Its consistence is very friable to firm. Its reaction is strongly acid to neutral.

The Bt horizon has hue of 7.5YR to 5Y, value of 0 to 6, and chroma of 2 to 4. It is mottled. It is silty clay or silty clay loam. Its structure is weak to strong platy, prismatic, or subangular blocky. Its consistence is firm or very firm. Its reaction is strongly acid to mildly alkaline.

The C horizon has hue of 5YR to 5Y, value of 3 to 5, and chroma of 1 to 4. It is varved clay that has thin layers of silt, but the range includes silty clay loam or clay that has discontinuous subhorizons ranging to fine sand. The horizon is massive. Its consistence is firm. Its reaction is slightly acid to moderately alkaline.

Riverhead Series

The Riverhead series consists of very deep, well drained soils on terraces near Normanskill Creek, on ridges in the lake plain, and on slopes above the Mohawk River. These soils formed in glacial outwash, beach, and deltaic deposits. Slope ranges from 0 to 15 percent.

Riverhead soils, the well drained Unadilla soils, the moderately well drained Scio and Elmridge soils, and the somewhat poorly drained Shaker and Raynham soils formed in similar material. Riverhead soils have coarser textures than Unadilla, Scio, and Raynham soils. Unlike Riverhead soils, Elmridge and Shaker soils have clay at a depth of 18 to 36 inches.

Typical pedon of Riverhead fine sandy loam, 3 to 8 percent slopes, in the town of Bethlehem, 225 feet west of Blessing Road and 2,000 feet south of Krumkill Road:

Ap—0 to 11 inches; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; weak fine granular structure; very friable; many roots; moderately acid; abrupt smooth boundary.

Bw1—11 to 19 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; few pores; moderately acid; clear wavy boundary.

Bw2—19 to 25 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure parting to weak fine granular; very friable; common fine roots; 10 percent fine gravel; moderately acid; clear wavy boundary.

BC—25 to 31 inches; yellowish brown (10YR 5/4) loamy fine sand; very weak fine subangular blocky structure; very friable; few fine roots; 2 percent fine gravel; moderately acid; abrupt wavy boundary.

2C—31 to 65 inches; olive brown (2.5Y 4/4) gravelly fine sand; single grain; loose; few fine roots; 15 percent fine gravel; moderately acid.

The solum ranges from 22 to 36 inches in thickness. Fine gravel content ranges from 2 to 15 percent in the solum and from 5 to 35 percent in the C horizon.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. It is fine sandy loam, sandy loam, or loam in the fine earth fraction. Its structure ranges from weak to moderate granular. Its consistence is friable or very friable. Its reaction is strongly acid or moderately acid.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. Its texture is fine sandy loam to sandy loam in the fine earth fraction and becomes gravelly with depth. Its structure is weak subangular blocky, or the horizon is massive. Its consistence is friable or very friable. Its reaction is extremely acid to moderately acid.

The C horizon has hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. It is loamy sand or sand in the fine earth fraction or stratified sand and gravel. It is structureless and loose. Its reaction is very strongly acid to neutral.

Scio Series

The Scio series consists of very deep, moderately well drained soils on lake plains. These soils formed in very deep deposits of silts and very fine sands. Slope ranges from 0 to 8 percent.

Scio soils are in a drainage sequence with the well drained Unadilla soils, the somewhat poorly drained Raynham soils, and the very poorly drained Birdsall soils. The moderately well drained Elmridge and Hudson soils and the somewhat poorly drained Rhinebeck soils formed in clayey lacustrine deposits and are on landscapes near Scio soils.

Typical pedon of Scio silt loam, 3 to 8 percent slopes, in the town of Bethlehem, on a private road northwest of the Blue Cross-Blue Shield Building, about ¾ mile northwest of the intersection of State Route 85 Slingerlands Bypass and New Scotland Avenue and 60 feet west of the private road with a gate:

Oi—1 inch to 0; relatively undecomposed leaves and needles.

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam; weak medium and fine granular structure; friable; many fine and medium roots; few coarse roots; very strongly acid; clear wavy boundary.

Bw1—8 to 18 inches; yellowish brown (10YR 5/6) silt loam; few fine faint yellowish brown (10YR 5/4) mottles; weak thick platy structure parting to weak medium and fine subangular blocky; friable; common fine and medium roots; few fine tubular pores; very strongly acid; clear wavy boundary.

Bw2—18 to 31 inches; dark brown (10YR 4/3) silt loam; few fine faint light brownish gray (10YR 6/2) mottles; weak fine and medium subangular blocky structure; friable; few medium roots; brown (7.5YR 5/4) clay nodules and light yellowish brown (10YR 6/4) very fine sand grains; few fine pores; very strongly acid; clear wavy boundary.

BC—31 to 34 inches; mixed yellowish brown (10YR 5/4), brown (10YR 5/3), and dark yellowish brown (10YR 4/4) silt; few fine faint light brownish gray (10YR 6/2) mottles; weak medium platy structure parting to weak fine and medium subangular blocky; friable; light yellowish brown (10YR 6/4) ped faces; few fine roots; common fine tubular and few fine vesicular pores; very strongly acid; abrupt smooth boundary.

2C1—34 to 44 inches; mixed brown (10YR 5/3) and yellowish brown (10YR 5/4) silt loam that has reddish brown (5YR 4/3) varves of silty clay; few fine faint yellowish brown (10YR 5/6) mottles; massive; firm; few fine roots; few fine shallow tubular pores; strongly acid; abrupt smooth boundary.

2C2—44 to 65 inches; brown (10YR 5/3), yellowish brown (10YR 5/4), and light yellowish brown (10YR 6/4) silt that has varves of reddish brown (5YR 4/3) and pale brown (10YR 6/3) silty clay; massive; firm; few fine roots; moderately acid.

The thickness of the solum ranges from 20 to 34 inches. The depth to the textural discontinuity is more than 34 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to

5 percent above a depth of 40 inches and 5 to 60 percent below.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Its texture is silt loam or very fine sandy loam. Its structure is weak fine or medium granular. Its consistence is friable or very friable. Its reaction is very strongly acid to moderately acid.

The B horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 3 to 6. It is mottled in the lower part. Its texture is silt loam, silt, or very fine sandy loam. Its structure is weak or moderate, fine to coarse platy, prismatic, or subangular blocky. Its consistence is friable. Its reaction ranges from very strongly acid to moderately acid.

The 2C horizon has hue of 7.5YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is generally mottled. Its texture is varved silt and silty clay. The horizon is massive, and its consistence is friable to firm. Its reaction ranges from strongly acid to mildly alkaline.

Shaker Series

The Shaker series consists of very deep, somewhat poorly drained and poorly drained soils on lake plains. These soils formed in lacustrine deposits of fine sandy loam that is 18 to 40 inches thick over silt and clay. Slope ranges from 0 to 3 percent.

Shaker soils, the moderately well drained Elmridge soils, the moderately well drained Claverack soils, and the somewhat poorly drained Cosad soils formed in similar material. Claverack and Cosad soils have deposits over clay that are sandier than Shaker soils. The somewhat poorly drained Rhinebeck, Raynham, and Stafford soils are on landscapes near Shaker soils. Rhinebeck soils formed in very deep deposits of silt and clay, Raynham soils formed in very deep deposits of silt, and Stafford soils formed in very deep deposits of fine sand.

Typical pedon of Shaker fine sandy loam, in the town of Guilderland, 50 feet east of the access road to the Fairwood Apartment Building, ¾ mile west of the intersection of State Route 155 and U.S. Route 20, and 1,190 feet south of U.S. Route 20, in previously cultivated woodland:

Ap—0 to 11 inches; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; weak medium subangular blocky structure parting to weak fine granular; very friable; many fine roots; moderately acid; abrupt smooth boundary.

Bw1—11 to 19 inches; grayish brown (10YR 5/2) fine sandy loam; common medium distinct dark brown (7.5YR 4/4) mottles and many medium and fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very friable; common fine roots; common pores; slightly acid; clear wavy boundary.

Bw2—19 to 26 inches; dark brown (10YR 4/3) sandy loam; many medium distinct yellowish brown (10YR 5/6) and many medium and coarse distinct dark brown (7.5YR 4/4) mottles; very weak medium and fine subangular blocky structure parting to weak fine granular; very friable; common fine roots; common pores; slightly acid; clear wavy boundary.

Bw3—26 to 31 inches; dark grayish brown (10YR 4/2) very fine sandy loam; many medium distinct yellowish brown (10YR 5/6), few medium distinct dark brown (7.5YR 4/4), and few medium faint grayish brown (10YR 5/2) mottles; weak medium subangular blocky structure; friable; few fine roots; few pores; neutral; clear wavy boundary.

2C—31 to 62 inches; reddish brown (5YR 4/4) and yellowish brown (10YR 5/4) clay varved with silt and very fine sandy loam; many medium and coarse distinct yellowish brown (10YR 5/6) and common medium distinct strong brown (7.5YR 5/8) mottles; moderate thin to medium platy structure; friable; few fine roots; light brownish gray (2.5Y 6/2) silt coatings on faces; neutral.

The thickness of the fine sandy loam mantle and that of the solum range from 18 to 40 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 5 percent in the solum and from 0 to 2 percent in the C horizon.

The Ap horizon has hue of 7.5YR or 10YR, value of 2 to 4, and chroma of 1 or 2. Its texture ranges from very fine sandy loam to sandy loam. Its consistence is friable or very friable. Its reaction ranges from strongly acid to moderately acid.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. Its texture ranges from very fine sandy loam to sandy loam. Its structure is granular or subangular blocky. Its consistence is very friable to firm. Its reaction ranges from strongly acid to neutral.

The 2C horizon has hue of 5YR to 5Y, value of 4 or 5, and chroma of 1 to 4. It is generally mottled. It is dominantly silty clay loam, silty clay, or clay, but it has thin layers of very fine sandy loam and silt. The horizon is massive, or its structure is platy. Its consistence is friable to very firm. Its reaction ranges from moderately acid to neutral.

Stafford Series

The Stafford series consists of very deep, somewhat poorly drained soils on sandy deltas and plains. These

soils formed in water-deposited sands. Slope ranges from 0 to 3 percent.

Stafford soils, the well drained Colonie soils, and the moderately well drained Elnora soils formed in similar material. The poorly drained and very poorly drained Granby soils have mucky surface layers and are adjacent to Stafford soils in depressions.

Typical pedon of Stafford loamy fine sand, in the town of Guilderland, 100 feet northeast of Lydius Street and 300 feet southeast of Service Road to Guilderland Thruway Rest Area, in an abandoned, previously cultivated field:

Ap—0 to 12 inches; very dark grayish brown (10YR 3/2) loamy fine sand, light brownish gray (10YR 6/2) crushed and dry; weak fine granular structure; very friable; many fine roots; moderately acid; abrupt smooth boundary.

Bw1—12 to 15 inches; pale brown (10YR 6/3) loamy fine sand; many fine and medium distinct reddish brown (5YR 4/4) mottles, many medium distinct yellowish brown (10YR 5/6) mottles, and few medium faint light brownish gray (2.5Y 6/2) mottles; weak medium subangular blocky structure; very friable; few fine roots; strongly acid; clear wavy boundary.

Bw2—15 to 30 inches; grayish brown (2.5Y 5/2) loamy fine sand; many coarse distinct yellowish brown (10YR 5/6) mottles, few medium faint light brownish gray (10YR 6/2) mottles, and many medium distinct reddish brown (5YR 4/4) mottles; weak very coarse prismatic structure parting to weak coarse platy; very friable; few fine roots; strongly acid; clear wavy boundary.

Cg—30 to 60 inches; dark gray (N 4/0) fine sand; few coarse distinct yellowish brown (10YR 5/6) mottles; very friable; few fine roots; moderately acid.

The solum ranges from 25 to 40 inches in thickness. Depth to bedrock is more than 60 inches.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2. Its texture is loamy fine sand or fine sand. Its structure is weak granular. Its consistence is very friable. Its reaction ranges from moderately acid to very strongly acid.

The Bw horizon has hue of 5YR to 5Y, value of 4 to 6, and chroma of 2 to 4. It has both high- and low-chroma mottles. Its texture is loamy fine sand or fine sand. Its structure is subangular blocky or platy, or the horizon is structureless. Its consistence is very friable, friable, or loose. Its reaction ranges from extremely acid to slightly acid.

The C horizon is neutral or has hue of 5YR to 5Y. It has value of 4 to 6 and chroma of 0 or 1. It has distinct or prominent mottles. It is fine sand or sand. It is structureless, single grain, or massive. Its consistence is very friable. Its reaction ranges from slightly acid to strongly acid.

Sudbury Series

The Sudbury series consists of very deep, moderately well drained soils on terraces near Normanskill Creek and on the lake plain. These soils formed in sandy glacial outwash deposits and in beach and deltaic deposits. Slope ranges from 0 to 8 percent.

Sudbury soils and the well drained Riverhead soils formed in similar materials. Unlike Sudbury soils, the moderately well drained Elmridge soils have a clayey substratum within a depth of 18 to 40 inches. The well drained Valois and Lordstown soils are similar in texture to Sudbury soils, but Sudbury soils are wetter and generally are sandier and have fewer rock fragments.

Typical pedon of Sudbury fine sandy loam, 0 to 3 percent slopes, in the town of New Scotland, 1.5 miles west of the intersection of County Route 204 and Krumkill Road, 750 feet south of Krumkill Road, and 1,500 feet northeast of Normanskill Creek, in an alfalfa field:

Ap—0 to 11 inches; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; very weak coarse subangular blocky structure parting to weak fine granular; friable; many fine roots; moderately acid; abrupt smooth boundary.

Bw1—11 to 20 inches; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; common fine roots; common pores; 2 percent fine gravel; moderately acid; clear wavy boundary.

Bw2—20 to 29 inches; yellowish brown (10YR 5/6) loamy sand; common medium distinct dark brown (7.5YR 4/4) mottles, few fine faint yellowish brown (10YR 5/8) mottles, and few medium distinct light brownish gray (2.5Y 6/2) mottles; very weak medium subangular blocky structure parting to weak fine granular; very friable; common fine roots; 5 percent fine gravel; strongly acid; clear wavy boundary.

C1—29 to 43 inches; yellowish brown (10YR 5/4) loamy sand; common medium faint yellowish brown (10YR 5/6) mottles, few medium distinct dark brown (7.5YR 4/4) mottles, and few medium distinct light brownish gray (10YR 6/2) mottles; single grain; loose; few fine roots; 5 percent fine gravel; moderately acid; clear wavy boundary.

C2—43 to 48 inches; brown (10YR 5/3) sand; common medium distinct yellowish brown (10YR 5/6) mottles;

single grain; loose; few fine roots; 5 percent fine gravel; moderately acid; clear wavy boundary.

2C3—48 to 60 inches; grayish brown (10YR 5/2) silt loam; weakly varved with very fine sand; firm in place; slightly acid.

The solum ranges from 20 to 36 inches in thickness. Depth to bedrock is more than 60 inches. Gravel content ranges from 0 to 10 percent in the solum and from 5 to more than 35 percent in the substratum.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 3. It is fine sandy loam. Its structure ranges from very weak subangular blocky to weak or moderate granular. Its reaction is strongly acid to slightly acid. Its consistence is friable to very friable.

The B horizon has hue of 10YR, value of 5, and chroma of 4 to 6. Mottles in the lower part of the B horizon have hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 2 to 8. The horizon is fine sandy loam to loamy sand. Its structure is weak subangular blocky to weak granular. Its consistence is friable or very friable. Its reaction is moderately acid to very strongly acid.

The C horizon has hue of 10YR, value of 5, and chroma of 2 to 4. Above a depth of 40 inches it is loamy sand, sand, or its gravelly analog. Below that depth, the sand and gravel commonly overlie loamy sediments. The horizon is massive or single grain and loose. Its reaction is moderately acid to neutral.

Teel Series

The Teel series consists of very deep moderately well drained soils on flood plains. These soils formed in recently deposited alluvium from nearby overflowing streams. Slope ranges from 0 to 3 percent.

Teel soils, the well drained Hamlin soils, the somewhat poorly drained Wakeland soils, and the poorly drained and very poorly drained Wayland soils formed in similar material. Hudson, Scio, Unadilla, and Elmridge soils are on landscapes near Teel soils but above flood plains. Teel soils have less clay in the subsoil than Hudson soils and have a browner subsoil than Scio, Unadilla, and Elmridge soils. Unlike Teel soils, Elmridge soils have contrasting deposits of fine sandy loam over clay loam.

Typical pedon of Teel silt loam, in the city of Albany, 900 feet west of McCormack Road and 100 feet north of Normanskill Creek, in an abandoned, previously cultivated field on the flood plain:

Ap—0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) crushed and dry; weak fine granular structure; very friable; many fine and very fine roots; slightly acid; abrupt smooth boundary.

Bw1—8 to 20 inches; dark grayish brown (10YR 4/2) silt loam; weak medium subangular blocky structure; very friable; common fine and very fine roots; common fine pores; neutral; many medium distinct dark yellowish brown (10YR 4/4) mottles; clear wavy boundary.

Bw2—20 to 29 inches; grayish brown (10YR 5/2) silt loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; common very fine roots; common fine pores; neutral; clear wavy boundary.

C1—29 to 33 inches; grayish brown (10YR 5/2) silt loam; many medium distinct dark yellowish brown (10YR 4/4) and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium and thick platy structure; friable; few very fine roots; many fine pores; neutral; clear wavy boundary.

C2—33 to 40 inches; grayish brown (2.5Y 5/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and many medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; few very fine roots; many fine pores; neutral; clear wavy boundary.

C3—40 to 60 inches; dark grayish brown (10YR 4/2) fine sandy loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; common medium distinct strong brown (7.5YR 5/8) and grayish brown (10YR 5/2) mottles; massive; very friable; neutral.

The solum ranges from 24 to 40 inches in thickness. Coarse fragments range from 0 to 5 percent in the A and B horizons and from 0 to 20 percent in the C horizon.

The Ap horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 1 to 3. Its texture is silt loam or very fine sandy loam. Its structure is weak or moderate, fine or medium granular. Its consistence is very friable or friable. Its reaction ranges from strongly acid to neutral.

The Bw horizon has hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It has high- and low-chroma mottles between a depth of 12 and 24 inches. Texture is silt loam or very fine sandy loam. Structure is weak or moderate, medium or coarse subangular blocky or prismatic. Consistence is friable or very friable. Reaction ranges from strongly acid to neutral.

The C horizon has hue of 5YR to 2.5Y, value of 3 to 5, and chroma of 1 to 4. It is mottled. Its texture is silt loam, very fine sandy loam, or fine sandy loam. The horizon is massive, or its structure is platy. Its consistence is very friable to firm. Its reaction ranges from moderately acid to mildly alkaline.

Tioga Series

The Tioga series consists of very deep, well drained soils on flood plains. These soils formed in loamy alluvium. Slope ranges from 0 to 3 percent.

Tioga, Middlebury, and Wayland soils formed in similar parent material. Wayland and Middleburg soils have mottles within a depth of 24 inches. Howard and Chenango soils are on nearby glacial outwash terraces and alluvial fans. Tioga soils have slightly fewer rock fragments in the surface layer and subsoil than the other soils.

Typical pedon of Tioga silt loam, in the town of Berne, 1,860 feet south on County Route 1 from the intersection with County Route 13 and 320 feet west of County Route 1, in a cornfield:

Ap—0 to 11 inches; dark brown (10YR 3/3) silt loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine roots; 10 percent rock fragments; neutral; abrupt smooth boundary.

Bw1—11 to 26 inches; dark yellowish brown (10YR 4/4) gravelly sandy loam; weak medium subangular blocky structure; friable; common fine roots; few fine tubular pores; 30 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—26 to 34 inches; brown (10YR 4/3) gravelly fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; common fine tubular pores; 25 percent rock fragments; slightly acid; clear wavy boundary.

C1—34 to 42 inches; light olive brown (2.5Y 5/4) very gravelly loam; weak medium subangular blocky structure; friable; few fine roots; common fine tubular pores; 45 percent rock fragments; slightly acid; clear wavy boundary.

C2—42 to 65 inches; olive brown (2.5Y 4/4) very gravelly loamy fine sand; single grain; loose; 50 percent rock fragments; slightly acid.

The solum ranges from 18 to 40 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 0 to 15 percent in the surface layer, from 0 to 35 percent in the subsoil, and from 0 to 60 percent in the substratum. Reaction ranges from strongly acid to neutral in the solum and from moderately acid to mildly alkaline in the substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture ranges from fine sandy loam to silt loam in the fine earth fraction. Its structure is weak or moderate granular. Its consistence is very friable or friable.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. Its texture, in the fine earth fraction, is fine sandy loam to silt loam and, in a subhorizon, sandy loam or loamy sand. Its structure is weak or moderate subangular blocky, prismatic, or granular. Its consistence is very friable or friable.

The C horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture ranges from loamy sand to silt loam in the fine earth fraction. Its consistence is loose or friable.

Tuller Series

The Tuller series consists of shallow, somewhat poorly drained to poorly drained soils on bedrock-controlled plateaus and on long, narrow benches with a border of exposed bedrock. These soils formed in thin deposits of glacial till that overlies interbedded sandstone and shale or siltstone bedrock. Slope ranges from 0 to 8 percent.

Tuller soils are similar to and are mapped in a complex with the moderately deep, somewhat poorly drained Greene soils. They are also similar to the shallow, somewhat excessively drained and well drained Arnot soils. Lordstown and Angola soils are on landscapes near Tuller soils. Angola soils have more clay in the solum. Lordstown soils are well drained.

Typical pedon of Tuller channery silt loam, in an area of Tuller-Greene complex, 0 to 8 percent slopes, in the town of Knox, 60 feet west of County Route 25 and 1 mile south of the intersection of County Routes 252 and 253, about 300 feet east of Schoharie County, in a field:

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) channery silt loam; weak fine granular structure; very friable; many fine roots; 20 percent rock fragments; moderately acid; abrupt smooth boundary.

Bw—8 to 16 inches; olive (5Y 5/3) channery silt loam; many medium and coarse prominent strong brown (7.5YR 5/8) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; friable; common fine roots; gray (5Y 5/1) silt coatings on faces of peds; light gray (5Y 6/1) silt coatings on prism faces; 20 percent rock fragments; strongly acid; abrupt wavy boundary.

R—16 inches; dark gray (5Y 4/1) fractured sandstone and siltstone.

The thickness of the solum and the depth to interbedded sandstone and shale bedrock range from 10 to 20 inches. The content of rock fragments ranges, by volume, from 15 to 35 percent in the solum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 or 3. Its texture is loam or silt

loam in the fine earth fraction. Its structure is weak or moderate granular. Its consistence is friable or very friable. Its reaction ranges from moderately acid to extremely acid.

The Bw horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 or 3. It has few to many mottles and ped faces with chroma of 2 or less. It is silt loam, loam, or very fine sandy loam in the fine earth fraction. Its structure is weak coarse prismatic to weak medium subangular blocky. Its consistence is friable or firm. Its reaction ranges from moderately acid to strongly acid.

Udifluvents

Udifluvents consist of very deep, well drained and moderately well drained soils. These soils formed in recent alluvial deposits on flood plains of large, fast-flowing streams that are subject to frequent flooding. Slope ranges from 0 to 3 percent.

Udifluvents are mapped with Fluvaquents. They are near Hamlin, Teel, Wakeland, Wayland, and Chenango soils. The adjacent stream scours, cuts, laterally erodes, and frequently shifts the Udifluvents soil material from place to place. The adjacent stream has caused very little recent disturbance of Hamlin, Teel, Wakeland, and Wayland soils.

Udifluvents are variable, and a typical pedon is not provided. The A horizon is 1 to 6 inches thick. Depth to bedrock is more than 60 inches. Rock fragments, including pebbles, cobblestones, and flagstones, range, by volume, from 2 to 60 percent. Reaction ranges from strongly acid to neutral throughout.

The A horizon has hue of 5YR to 2.5Y, value of 4 to 6, and chroma of 2 or 3. Its texture ranges from silt loam to fine sandy loam in the fine earth fraction.

The C horizon has hue of 5YR to 2.5Y, value of 3 to 6, and chroma of 2 to 6. Its texture ranges from silt loam to sandy loam in the fine earth fraction.

Udipsamments

Udipsamments consist of very deep, well drained to somewhat excessively drained soils on lake plains, deltas, flood plains, and dunes that have been smoothed or filled. Many areas resulted from dredgings pumped from the Hudson River to deepen existing shipping channels. Slope ranges from 0 to 8 percent.

Udipsamments are near Colonie, Elnora, Stafford, Hamlin, Teel, and Wayland soils. Udipsamments are variable, and a typical pedon is not provided. The solum varies in thickness but generally ranges from 10 to 40 inches. Depth to bedrock is more than 60 inches. Reaction ranges from strongly acid to neutral throughout.

The surface has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. Its texture ranges from loamy very fine sand and fine sandy loam to sand.

The subsoil has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. Its texture is loamy fine sand or sand.

The substratum has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Its texture is loamy fine sand or sand.

Udorthents

Udorthents consist of very deep, moderately well drained and well drained, clayey or loamy soils that have been reshaped in cutting and filling operations. These soils are commonly near construction sites or urban developments that have been recently cut and filled. Slope ranges from 0 to 8 percent.

Udorthents are variable, and a typical pedon is not provided. The soils have little or no profile development. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 45 percent. Reaction ranges from strongly acid to neutral throughout and varies with the fill material.

The surface layer has hue of 7.5YR to 2.5Y, value of 2 to 5, and chroma of 2 to 4. Its texture ranges from fine sandy loam to clay in the fine earth fraction.

The subsoil has hue of 7.5YR to 5Y, value of 3 to 6, and chroma of 2 to 6. It is commonly mottled where cuts and fills are in Hudson and Rhinebeck soils. Its texture ranges from fine sandy loam to clay in the fine earth fraction.

The substratum has hue of 5YR to 5Y, value of 1 to 6, and chroma of 1 to 6. Its texture ranges from fine sandy loam to clay in the fine earth fraction.

Unadilla Series

The Unadilla series consists of very deep, well drained soils on lake plains. These soils formed in water-laid deposits of silt and very fine sand. Slope ranges from 0 to 25 percent.

Unadilla soils, the moderately well drained Scio soils, and the poorly drained Raynham soils formed in similar material. The moderately well drained Elmridge and Claverack soils both overlie clay and are on landscapes near Unadilla soils.

A typical pedon of Unadilla silt loam, 3 to 8 percent slopes, on the Knagg Farm, in the town of Guilderland, ¾ mile east of the intersection of New York 158 and U.S. 20 and about 440 feet north of U.S. 20, in a cultivated area:

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam; moderate very fine granular structure; very friable,

many fine roots; slightly acid; abrupt smooth boundary.

Bw1—9 to 14 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

Bw2—14 to 20 inches; dark yellowish brown (10YR 4/4) silt loam; weak fine subangular blocky structure; friable; few fine roots; very strongly acid; clear wavy boundary.

Bw3—20 to 24 inches; yellowish brown (10YR 5/4) very fine sandy loam; weak fine subangular blocky structure; very friable; few fine roots; very strongly acid; clear wavy boundary.

C—24 to 64 inches; dark yellowish brown (10YR 4/4) very fine sandy loam; moderate thin to thick platy structure; very friable; few fine roots; strongly acid; varved layers of silt and very fine sand about ½ inch thick.

The solum ranges from 20 to 50 inches in thickness. Depth to bedrock or strongly contrasting material is more than 60 inches. The content of rock fragments ranges, by volume, from 0 to 5 percent in the solum.

The Ap horizon has hue of 7.5YR to 2.5Y, value of 3 to 5, and chroma of 2 to 4. It is silt loam to very fine sandy loam. Its structure is weak granular. Its consistence is very friable to firm. Unless limed, the surface layer is very strongly acid to moderately acid.

The Bw horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 6. It is silt loam or very fine sandy loam. Its structure is blocky or prismatic. Its consistence is very friable to firm. Its reaction is very strongly acid to moderately acid.

The C horizon has hue of 7.5YR to 5Y, value of 4 or 5, and chroma of 2 to 4. It is silt loam or very fine sandy loam above a depth of 40 inches and ranges from silty clay loam to very gravelly sand below that depth. The horizon is massive, or its structure is weak platy. Its consistence is loose to firm. Its reaction is strongly acid to mildly alkaline.

Valois Series

The Valois series consists of very deep, well drained soils on till plains or on complex slopes characteristic of end or lateral moraines. These soils formed in glacial till, dominantly sandstone, siltstone, or shale. Slope ranges from 3 to 25 percent.

Valois soils are adjacent to the well drained and somewhat excessively drained Chenango soils and the moderately well drained Nunda soils. Valois soils have fewer coarse fragments than Chenango soils. Chenango soils have sandy material above a depth of 40 inches. Unlike Valois soils, the moderately well drained Nunda soils do not have an argillic horizon. At the higher elevations, Valois soils are near the well drained Lordstown soils. Lordstown soils have bedrock at a depth of 20 to 40 inches.

Typical pedon of Valois gravelly loam, 3 to 8 percent slopes, in the town of Guilderland Center, 75 feet south of County Route 202 and 2,000 west of Route 201:

Ap—0 to 8 inches; dark brown (10YR 4/3) gravelly loam; moderate fine and medium granular structure; friable; many fine roots; 15 percent rock fragments; moderately acid; abrupt wavy boundary.

Bw1—8 to 26 inches; yellowish brown (10YR 5/4) gravelly loam; weak fine and medium subangular blocky structure; friable; common fine roots, few at a depth of 26 inches; many fine and medium pores, few at a depth of 11 inches; a few large pores with thin discontinuous silt linings; 20 percent rock fragments; strongly acid; gradual wavy boundary.

Bw2—26 to 30 inches; dark yellowish brown (10YR 4/4) gravelly loam; weak medium subangular blocky structure; friable; few fine roots; many small and large pores; 30 percent rock fragments that are very dark grayish brown (10YR 3/2) weathered shale; strongly acid; clear wavy boundary.

BC—30 to 46 inches; dark grayish brown (10YR 4/2) gravelly loam; few fine strong brown (7.5YR 5/6) splotches; weak medium subangular blocky structure; firm in place; few fine roots; many small and large pores; 30 percent rock fragments that are very dark grayish brown (10YR 3/2) weathered shale; strongly acid; gradual wavy boundary.

C—46 to 60 inches; dark grayish brown (10YR 4/2) very gravelly loam; weak medium platy structure; firm; very few roots; many medium pores; 35 percent rock fragments; moderately acid.

The solum ranges from 30 to 70 inches in thickness. Depth to bedrock is more than 60 inches. The content of rock fragments ranges from 5 to 35 percent in the surface layer and in the upper part of the subsoil and from 20 to 35 percent in the lower part of the subsoil. The content of rock fragments ranges, by volume, from 35 to 70 percent in contrasting layers commonly below a depth of 40 inches.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. Its texture ranges from sandy loam to silt loam in the fine earth fraction. Its structure is moderate fine to medium granular. Its consistence is friable. Its reaction is moderately acid to very strongly acid.

The Bw horizon has hue of 10YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. Its texture is silt loam to

sandy loam in the fine earth fraction. Its structure is weak or moderate subangular blocky. Its consistence is friable. Its reaction ranges from very strongly acid to moderately acid. The BC horizon is similar to the Bw horizon but has lower chroma.

The C horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 to 4. Its texture is sandy loam, fine sandy loam, or loam. Its structure is weak medium platy. Its consistence is firm. Its reaction is very strongly acid to neutral.

Wakeland Series

The Wakeland series consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in recently deposited silty material from nearby overflowing streams. Slope ranges from 0 to 3 percent.

Wakeland soils, the well drained Hamlin soils, the moderately well drained Teel soils, and the poorly drained and very poorly drained Wayland soils formed in similar material. Hudson, Scio, Unadilla, and Elmridge soils are on landscapes near Wakeland soils. Wakeland soils have less clay than Hudson soils and are subject to flooding. Wakeland soils are grayer and more mottled in the subsoil than Scio, Unadilla, and Elmridge soils. Unlike Wakeland soils, Elmridge soils have contrasting deposits of fine sandy loam over silty clay loam.

Typical pedon of Wakeland silt loam, in the town of Bethlehem, adjacent to the Vloman Kill about 2,000 feet south of County Route 53 along a driveway leading to an historic stone house and about 300 feet northeast of the house (the driveway begins just east of the intersection of County Route 53 and Elm Street):

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam; weak medium and fine granular structure; very friable; many fine and common medium roots; slightly acid; abrupt smooth boundary.

C1g—9 to 17 inches; grayish brown (10YR 5/2) silt loam; common fine distinct light yellowish brown (10YR 6/4) mottles; weak very fine subangular blocky structure; friable; few fine roots; common fine and medium tubular pores; slightly acid; clear smooth boundary.

C2g—17 to 28 inches; grayish brown (10YR 5/2) silt loam; common fine faint yellowish brown (10YR 5/4) and common fine distinct light yellowish brown (10YR 6/4) mottles; massive; friable; common very fine tubular pores; neutral; clear smooth boundary.

C3—28 to 62 inches; yellowish brown (10YR 5/4) silt loam; few fine distinct light brownish gray (10YR 6/2) mottles; massive; friable; slightly acid.

The soil is moderately acid to neutral throughout.

The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Its texture is silt loam. Its structure is weak or moderate, fine or medium granular.

The Cg horizon, to a depth of about 30 inches, has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 1 to 4. It is mottled. Its texture is silt loam. Its structure is weak subangular blocky, or the horizon is massive.

The C horizon, below a depth of 30 inches, has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 6. It is mottled. It is dominantly silt loam but in some pedons has thin layers of very fine sandy loam or fine sandy loam below a depth of 40 inches. The horizon is massive, or its structure is platy.

Wassaic Series

The Wassaic series consists of moderately deep, well drained to moderately well drained soils on till plains. These soils formed in glacial till derived mainly from limestone but also from some sandstone and shale. Slope ranges from 0 to 15 percent.

Wassaic soils are similar to Nunda, Burdett, Ilion, Angola, and Farmington soils. Unlike Wassaic soils, Nunda soils are very deep, Burdett soils are very deep and somewhat poorly drained, Ilion soils are very deep and poorly drained and very poorly drained, and Angola soils are moderately deep and somewhat poorly drained. Farmington soils are shallow to bedrock and are well drained and somewhat excessively drained.

Typical pedon of Wassaic silt loam, 3 to 8 percent slopes, in the town of New Scotland, southeast of Grosbeck Road, ½ mile west of the intersection of New York 32 and Flat Rock Road, in cropland:

Ap—0 to 9 inches; dark brown (10YR 4/3) silt loam; moderate medium granular structure; friable; common fine roots; 5 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw—9 to 20 inches; yellowish brown (10YR 5/4) loam; moderate medium subangular blocky structure; friable; common fine roots; many medium pores; 5 percent rock fragments; slightly acid; clear wavy boundary.

B/E—20 to 26 inches; dark yellowish brown (10YR 4/4) loam (B part); moderate medium subangular blocky structure; friable; few fine roots; common brown (10YR 5/3) and light gray (10YR 7/2) silt coatings (E part); thin patchy clay films in pores and on faces of peds in lower part; 10 percent rock fragments; neutral; clear wavy boundary.

Bt—26 to 30 inches; dark yellowish brown (10YR 4/4) silty clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; moderate coarse subangular

blocky structure; firm; few fine roots; common fine pores; continuous clay films on faces of peds; 10 percent rock fragments; neutral; mildly alkaline just above bedrock; abrupt wavy boundary.

R—30 inches; limestone bedrock gently undulating, jointed.

The solum ranges from 20 to 36 inches in thickness. Depth to bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 0 to 35 percent in the A horizon and from 5 to 35 percent in the B and C horizons.

The Ap horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 or 3. It is fine sandy loam, loam, or silt loam. Its structure is weak or moderate granular. Its consistence is friable or very friable. Its reaction is moderately acid to neutral.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. In some pedons it has mottles of higher chroma. Its texture is commonly loam in the Bw horizon and loam to silty clay loam in the Bt horizon. Its structure is moderate, medium or coarse subangular blocky. Its consistence is friable to firm. Its reaction ranges from moderately acid to mildly alkaline.

Some pedons have a C horizon above the limestone bedrock.

Wayland Series

The Wayland series consists of very deep, poorly drained and very poorly drained soils on flood plains. These soils formed in recently deposited alluvium from nearby overflowing streams. Slope ranges from 0 to 3 percent.

Wayland soils, the well drained Hamlin soils, the moderately well drained Teel soils, and the somewhat poorly drained Wakeland soils formed in similar material. Hudson, Rhinebeck, Scio, Nunda, Burdett, and Arnot soils are on landscapes near Wayland soils but above flood plains. Wayland soils have less clay in the subsoil than Hudson and Rhinebeck soils and have a grayer and more mottled subsoil than Scio soils. Nunda soils are moderately well drained. The somewhat poorly drained Burdette soils formed in very deep glacial till. Arnot soils are shallow to bedrock.

Typical pedon of Wayland silt loam, in the town of Guilderland, 600 feet southeast of Grant Hill Road and 600 feet northeast of the dirt road, on a flood plain of Normanskill Creek:

Ap—0 to 5 inches; very dark grayish brown (10YR 3/2) silt loam, gray (10YR 5/1) crushed and dry; weak fine granular structure; very friable; many fine roots; moderately acid; clear wavy boundary.

AB—5 to 10 inches; dark gray (10YR 4/1) silt loam; many medium distinct dark brown (7.5YR 4/4) mottles; weak fine and medium granular structure; very friable; many fine roots; few pores; moderately acid; clear wavy boundary.

Bg1—10 to 20 inches; dark gray (10YR 4/1) silt loam; common fine distinct reddish brown (5YR 4/3) mottles; weak medium subangular blocky structure; very friable; common fine roots; few pores; neutral; clear wavy boundary.

Bg2—20 to 36 inches; dark gray (N 4/0) silty clay loam; many coarse prominent strong brown (7.5YR 5/8) and yellowish brown (10YR 5/6) mottles; weak and moderate coarse prismatic structure; friable; few fine roots; few pores; 2 to 5 percent rock fragments; neutral; abrupt wavy boundary.

2C—36 to 60 inches; dark gray (10YR 4/1) crudely stratified gravelly fine sandy loam; common medium prominent yellowish brown (10YR 5/6) mottles; massive; slightly sticky; few fine roots; 30 percent rock fragments; neutral.

The silty deposits are 36 to more than 60 inches thick over stratified materials. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, to 5 percent above a depth of 36 inches and to 30 percent below that depth.

The A horizon is neutral or has hue of 10YR or 2.5Y. It has value of 2 or 3 and chroma of 0 to 2. Its texture is silt loam or silty clay loam. Its structure is fine to coarse granular. Its consistence is very friable. Its reaction ranges from strongly acid to mildly alkaline.

The B horizon is neutral or has hue of 7.5YR to 5Y. It has value of 3 to 6 and chroma of 0 to 2. Its texture is silt loam or silty clay loam. Its structure is weak or moderate subangular blocky or prismatic. Its consistence is friable or firm. Its reaction ranges from strongly acid to mildly alkaline.

The 2C horizon is neutral or has hue of 7.5YR to 5Y. It has value of 3 to 6 and chroma of 0 to 2. Its texture is silt loam to fine sandy loam in the fine earth fraction. Its structure is platy, or the horizon is massive. Its consistence is slightly sticky. Its reaction ranges from moderately acid to moderately alkaline.

Wellsboro Series

The Wellsboro series consists of very deep, moderately well drained soils on uplands. These soils formed in glacial till deposits mainly from reddish sandstone, siltstone, and shale. Slope ranges from 3 to 25 percent.

Wellsboro, Lackawanna, and Morris soils formed in similar material. Lackawanna soils are well drained.

Morris soils are somewhat poorly drained. Wellsboro soils, in most places, are near Arnot, Oquaga, Kearsarge, Chautauqua, and Nunda soils. The well drained Arnot and Kearsarge soils are shallow to bedrock. The well drained Oquaga soils are moderately deep to bedrock. Chautauqua and Nunda soils do not have a fragipan.

Typical pedon of Wellsboro silt loam, 3 to 8 percent slopes, in the town of Rensselaerville, 200 feet northwest of a barn near County Route 12 and 530 feet northwest of the junction with Gulf Road Extension:

Ap—0 to 7 inches; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; weak fine granular structure; friable; many fine and medium roots; 10 percent rock fragments; slightly acid; abrupt smooth boundary.

Bw1—7 to 14 inches; brown (7.5YR 4/4) gravelly silt loam; weak medium subangular blocky structure; friable; common fine roots; common fine pores; 15 percent rock fragments; moderately acid; clear wavy boundary.

Bw2—14 to 18 inches; reddish brown (5YR 5/3) gravelly silt loam; many fine and medium distinct strong brown (7.5YR 5/6) and few fine faint brown (7.5YR 5/2) mottles; weak medium subangular blocky structure; friable; few fine roots; common fine pores; 20 percent rock fragments; strongly acid; abrupt wavy boundary.

Bx—18 to 60 inches; reddish brown (5YR 4/3) very gravelly loam; few fine faint yellowish red (5YR 4/6) mottles; weak very coarse prismatic structure parting to weak medium and coarse subangular blocky; very firm and brittle; common fine pores; 35 percent rock fragments; ½-inch pinkish gray (7.5YR 7/2) silt streaks with strong brown (7.5YR 5/6) borders along prism faces; moderately acid.

The solum ranges from 40 to 75 inches or more in thickness. Depth to the fragipan ranges from 18 to 26 inches. Depth to bedrock is more than 60 inches. The content of rock fragments ranges, by volume, from 5 to 40 percent in the A and Bw horizons and from 15 to 50 percent in the Bx horizon.

The Ap horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 2 or 3. It is silt loam or loam in the fine earth fraction. Its structure is fine granular. Its reaction ranges from very strongly acid to moderately acid.

The Bw horizon has hue of 5YR to 7.5YR, value of 4 or 5, and chroma of 3 to 6. It is silt loam or loam in the fine earth fraction. Its structure is fine and medium subangular blocky. Its reaction ranges from very strongly acid to moderately acid.

The Bx horizon has hue of 5YR, value of 3 to 5, and chroma of 3 or 4. It is loam or silt loam in the fine earth fraction. Its structure generally is prismatic separating to platy or blocky. Its consistence is very firm or extremely firm. Its reaction is very strongly acid to moderately acid.

Formation of the Soils

The first part of this section describes the factors of soil formation and relates them to the formation of soils in the survey area. The second part defines the processes of soil horizon development as they relate to soil formation in Albany County.

Factors of Soil Formation

Soils are products of weathering and other physical and chemical processes that act on parent material. The properties of the soil at any point on the earth depend on the combination of factors at that point. These factors are the physical and chemical composition of the parent material, the climate, the plant and animal life, the topography, and time. The relative influence of each of these factors of soil formation differs from place to place, and each modifies the effect of the other four. For example, relief and the nature of the parent material influence the effects of climate and plant and animal life. In some places the influence of one factor is dominant.

Parent Material

Parent material is the unconsolidated earthy mass in which soils form. It determines the mineralogical and physical composition and contributes greatly to the chemical composition of the soil. It also influences the rate of soil-forming processes.

Most of the soils in Albany County formed in glacial deposits. Glacial till is the most extensive parent material. Glaciolacustrine (lake-laid) sediments and glaciofluvial (outwash) deposits are less extensive. Some soils have been forming in recent deposits of stream alluvium and in accumulations of organic matter.

Soils formed in glacial till deposits have a wide range of characteristics as a result of the heterogeneous mixture of rock and soil particles. An argillic horizon and substrata are common in the deeper soils. Nunda, Burdett, and Ilion soils formed in deep, glacial till deposits. In some areas the till mantle is moderately deep or shallow over bedrock. Manlius, Nassau, and Arnot soils formed in these areas. The bedrock in Albany County varies from sandstone to shale to limestone. The local bedrock makes up a big part of the till deposits.

As the glacial ice melted, enormous quantities of meltwater carried and sorted soil and rock debris. This outwash material was redeposited as layers of sand and gravel on outwash plains, races, kames, eskers, and deltas. Chenango and Howard soils are examples of soils formed in kames. Those soils are commonly medium textured to coarse textured.

Many larger valleys at one time contained glacial lakes that trapped glacial meltwater. Most of the stone-free sediment deposited in the quiet lake waters was clayey and silty. Rhinebeck, Hudson, and Raynham soils are examples of soils that formed in these fine to medium textured deposits.

In more recent times, overflowing streams have deposited fresh, dark alluvial material on flood plains. Soils forming in this material are typically silty or loamy and have weak profile development. Hamlin and Teel soils are examples of alluvial soils.

Soils formed in organic deposits in low areas are muck. Carlisle and Palms soils formed in the well decomposed remains of trees and other plants.

Topography

The shape of the land surface, or topography, is commonly called the lay of the land. The lay of the land, the slope, and the position of the land surface in relation to the water table have had a great influence on the formation of soils.

Soils that formed in convex sloping areas where little runoff accumulates or where runoff is moderate or rapid generally are well drained and have a bright-colored, unmottled subsoil. They are generally leached to greater depths than low-lying, wetter soils in the same area.

In more gently sloping areas where runoff is slow, mottling in the subsoil is evidence of some wetness.

In level areas or slight depressions where the water table is at or near the surface for long periods, a thick, dark colored, organic surface layer and a strongly mottled or grayish subsoil are evidence of a marked degree of wetness.

Some soils are wet because they are in positions where water accumulates and is perched above an impervious layer in the soils. The permeability of the soil and the length, percent, and configuration of slopes influence the kind of soils that form.

Local differences in soils are largely the result of differences in parent material and topography. Table 19 shows the relationships between parent material, landscape position, and drainage of the soils in the county.

Climate

Climate, particularly temperature and precipitation, is one of the most influential soil-forming factors. It largely determines the kind of weathering processes that occur. It also affects the kind and growth of plants and the leaching and translocation of weathered material.

Albany County has a humid, temperate climate that tends to promote the development of moderately weathered, leached soils. The average temperature increases in lowland areas and on south-facing slopes, compared to the high elevations of the Helderberg Mountains. The variability of climate is the cause of differences among the soils. For more detailed information on climate, see "General Nature of the County."

Plant and Animal Life

All living organisms, including plants, animals, bacteria, and fungi, are important in soil formation. Vegetation is generally responsible for the amount of organic matter and nutrients in the soil and for the color and structure of the surface layer. Animal life, such as earthworms and burrowing animals, helps keep the soil porous and permeable to air and water. Animal waste products aggregate soil particles and improve soil structure. Bacteria and fungi decompose vegetation, thus releasing nutrients for plant use.

Albany County was originally under native forest of northern hardwoods and pines in varying proportions. Hardwoods take up large quantities of bases or nutrients and return much of this material as leaf litter to the soil surface each year. In contrast, pines and other conifers do not use large amounts of nutrients. As a result, the soil becomes more acidic.

The shallow root zone in many of the soils causes windthrow. Windthrow mixes the soil material.

Human activities also influence changes in the soil. These include clearing trees, cultivating the land, adding nutrients through fertilizers, plowing and mixing some soil horizons, and accelerating erosion in many areas. All these activities change the soil.

Time

Time is a passive but important soil-forming factor. The deposits in which soils formed in Albany County are relatively young. Most of the material was left after the retreat of the last glacier, 10,000 to 15,000 years ago. All the soils, however, have not reached the same stage of profile development. The degree of profile development reflects not only the age of the soil but also the influence of other factors. Elmridge and Hudson soils appear to be younger than Nunda and Chenango soils, but a difference in parent material caused this difference in appearance. All four have well-defined horizons. An immature soil has not had enough time for distinct horizons to form. Teel and Wayland soils, for example, have been forming in alluvial sediments on flood plains. They are immature because of the periodic deposition of fresh alluvium.

Processes of Soil Formation

The soil-forming factors and the subsequent processes of soil formation result in the formation of different layers, or soil horizons. These horizons are apparent in the vertical cut called a soil *profile*. The profile extends from the surface downward into material that the soil-forming processes have altered very little. Most soils contain three major horizons: the A, the B, and the C.

Several processes are involved in the formation of soil horizons. These include accumulation of organic matter, leaching of soluble salts and minerals, translocation of silicate clay minerals, reduction and transfer of iron, and formation of compact layers in the subsoil.

Organic matter accumulates as plant residue decomposes. This process darkens the surface layer and helps form the A1 horizon. The surface layer of soils in Albany County is about 35 percent organic matter.

For distinct subsoil horizons to develop, some lime and other soluble salts must be leached so that other processes, such as translocation of clay minerals, can take place. Factors that affect leaching are the kinds of salts originally present, the rate and depth of percolation, and the soil texture.

One of the most important processes of soil horizon development in some of the soils in Albany County is the translocation of silicate clay minerals. The parent material determines the content of clay minerals in the soil, but clay content varies from one horizon to another. Clay particles are moved (eluviated) downward from the A horizon and redeposited (illuviated) in the B horizon as clay films on faces of peds, as linings along

pores and root channels, and as coatings on some coarse fragments. In Hudson soils, for example, the clay content is higher in the B horizon than in the A horizon because of translocation. In some soils an A2 horizon has formed after a considerable eluviation of clay minerals to the B horizon.

Reduction and transfer of iron compounds, or gleying, occurs mainly in the wetter, more poorly drained soils. In poorly drained and very poorly drained soils, such as Madalin soils, the grayish subsoil indicates the reduction, removal, and transfer of iron in solution. In moderately well drained to somewhat poorly drained soils, yellowish brown and reddish brown mottles indicate the segregations of iron compounds. In these soils oxidation takes place along with some reduction.

In several well drained and moderately well drained soils, the subsoil is strong brown, yellowish brown, or reddish brown. Thin coatings of iron oxides on sand and silt particles are the main cause of these colors. A bright colored subsoil with iron oxide coatings is commonly termed a "color B horizon." It has a normally developed subangular blocky structure but contains little or no clay translocated from the overlying surface horizon. Chenango and Valois soils, for example, have a color B horizon.

Many soils in Albany County, for example, Morris, Wellsboro, and Lackawanna soils, have a distinct fragipan in the subsoil. These horizons are very firm and brittle when moist and very hard when dry. The genesis of these horizons is not fully understood. Studies indicate that the shrinking and swelling that takes place in alternating wet and dry periods may have certain effects. These are the packing of soil particles, the low pore space, and the large prisms on polygonal particles of vertical cracks evident in most fragipans. Clay, silica, and oxides of aluminum are the most likely agents that cause brittleness and hardness.

References

(1) American Association of State Highway and Transportation Officials. 1982. Standard specifications for highway materials and methods of sampling and testing. Ed. 13, 2 vols., illus.

(2) American Society for Testing and Materials. 1985. Standard test method for classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Arnold, R.W. 1979. Map units test models. Cornell Univ., Coll. Agric. and Life Sci., Dep. Agron.

(4) Arnow, T. 1940. The ground water resource of Albany County, New York. N.Y. State Dep. Conserv. Bull. 20, 55 pp.

(5) Broughton, J.G. 1962. The geology of New York State. Map and Chart Ser. 42, illus.

(6) Clark, P., and P.F. Karrow. 1983. Till stratigraphy in the St. Lawrence Valley near Malone, New York. Geol. Soc. of Am. 94: 1308-1318.

(7) Cline, M.G., and R.L. Marshall. 1976. Soils of New York landscapes. N.Y. State Coll. of Agric. and Life Sci., Dep. Agron. Bull. 119, 61 pp., illus.

(8) Cook, J.M. 1924. The disappearance of the last glacial ice-sheet from eastern New York. N.Y. State Mus. Bull. 251: 158-176.

(9) Cornell University, College of Agriculture and Life Sciences, Department of Agronomy. 1980. Soil productivity rating for Albany County. Cornell Univ., N.Y., 4 pp.

(10) Dineen, R.J. 1983. Glacial retreat in Hudson Valley between New Paltz and Schenectady, New York. Geol. Soc. of Am. 15: 134.

(11) Dineen, R.J., and W.B. Rogers. 1979. Sedimentary environments in Glacial Lake Albany in the Albany section of the Hudson-Champlain Lowlands. N.Y. State Geol. Assoc. and New Engl. Intercoll. Geol. Conf. pp. 87-119.

(12) Fickies, R.H. 1982. Generalized bedrock geology of Albany County, New York. N.Y. State Mus. Lft. 25.

(13) Roseberry, C.R. 1983. Albany, three centuries a county. Argus Press Inc., Albany, N.Y., 39 pp.

(14) United States Department of Agriculture. 1942. Soil survey of Albany and Schenectady Counties, New York. 79 pp., illus.

(15) United States Department of Agriculture. 1951. Soil survey manual. U.S. Dep. Argic. Handb. 18, 503 pp., illus.

(16) United States Department of Agriculture. 1970. The timber resources of New York. Forest Serv. Resource Bull. NE-20, 193 pp., illus.

(17) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp, illus.

(18) United States Department of Agriculture. 1982. Forest statistics for New York, 1980. Forest Serv., Northeast. Forest Exp. Stn. Resource Bull. NE-71, 118 pp.

(19) United States Department of Agriculture. 1983. New York State inventory of soil and water conservation needs. Soil Conserv. Serv., Hyattsville, Md., 287 pp.

(20) United States Department of Commerce. 1974. Census of agriculture, Albany County, New York. Bur. of the Census, vol. 1, part 32, pp. 229-234.

Glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as:

Very low	0 to 2.4
Low	2.4 to 3.2
Moderate	3.2 to 5.2
High	more than 5.2

Basal till. Compact glacial till deposited beneath the ice.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a channer.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free

water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these. *Very poorly drained.*—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grains are grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Glaciofluvial deposits (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.

Glaciolacustrine deposits. Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in

diameter. An individual piece is a pebble.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, any plowed or disturbed surface layer.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is in part a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) granular, prismatic, or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface

through pipes or nozzles from a pressure system. *Subirrigation.*—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.
Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Karst (topography). The relief of an area underlain by limestone that dissolves in differing degrees, thus forming numerous depressions or small basins.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil, adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch

Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the substratum. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the substratum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Arranged in layers.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from about 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terminal moraine. A belt of thick glacial drift that

generally marks the termination of important glacial advances.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Varve. A sedimentary layer of a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-78 at Albany, New York)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January-----	30.1	11.7	20.9	55	-18	8	2.32	1.36	3.16	7	15.8
February----	33.2	14.5	23.8	56	-17	0	2.33	1.41	3.14	6	15.0
March-------	42.3	24.4	33.4	71	2	33	3.00	1.99	3.92	7	12.5
April-------	57.6	35.5	46.6	85	17	223	2.90	2.08	3.66	7	2.3
May---------	69.4	45.2	57.3	90	28	536	3.36	1.88	4.66	8	.1
June--------	78.5	55.2	66.8	96	37	804	3.28	1.86	4.52	7	.0
July--------	83.1	59.5	71.4	97	45	973	3.02	1.53	4.31	7	.0
August------	80.7	57.5	69.1	94	42	902	3.25	1.95	4.40	7	.0
September---	72.7	49.6	61.2	91	30	636	3.24	1.69	4.59	6	.0
October-----	61.7	39.4	50.6	82	20	335	2.93	1.25	4.35	6	.1
November----	47.8	30.8	39.3	71	10	83	3.02	1.63	4.24	7	4.8
December----	34.6	18.4	26.5	60	-10	16	3.14	1.71	4.39	7	16.4
Yearly:											
Average---	57.6	36.8	47.2	---	---	---	---	---	---	---	---
Extreme---	---	---	---	97	-21	---	---	---	---	---	---
Total-----	---	---	---	---	---	4,549	35.79	30.03	41.31	82	67.0

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-78 at Albany, New York)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 24	May 6	May 24
2 years in 10 later than--	Apr. 19	May 1	May 19
5 years in 10 later than--	Apr. 10	Apr. 23	May 8
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 10	Oct. 3	Sept. 19
2 years in 10 earlier than--	Oct. 16	Oct. 7	Sept. 22
5 years in 10 earlier than--	Oct. 27	Oct. 16	Sept. 29

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-78 at Albany, New York)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	177	158	126
8 years in 10	185	164	132
5 years in 10	200	175	144
2 years in 10	214	187	156
1 year in 10	222	193	162

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ad	Adrian muck	270	0.1
Ae	Allis silt loam	510	0.2
AnA	Angola silt loam, 0 to 3 percent slopes	1,280	0.4
AnB	Angola silt loam, 3 to 8 percent slopes	4,250	1.3
AnC	Angola silt loam, 8 to 15 percent slopes	600	0.2
ArC	Arnot very channery silt loam, 8 to 15 percent slopes	5,500	1.6
AsB	Arnot-Rock outcrop complex, 0 to 8 percent slopes	4,375	1.3
AsF	Arnot-Rock outcrop complex, 25 to 70 percent slopes	8,370	2.5
Br	Birdsall mucky silt loam	510	0.2
BuA	Burdett silt loam, 0 to 3 percent slopes	4,870	1.4
BuB	Burdett silt loam, 3 to 8 percent slopes	19,425	5.7
BuC	Burdett silt loam, 8 to 15 percent slopes	3,380	1.0
BvB	Burdett silt loam, 0 to 8 percent slopes, very stony	190	*
BxA	Busti silt loam, 0 to 3 percent slopes	580	0.2
BxB	Busti silt loam, 3 to 8 percent slopes	1,780	0.5
Ca	Carlisle muck	590	0.2
CeA	Castile gravelly loam, 0 to 3 percent slopes	650	0.2
CeB	Castile gravelly loam, 3 to 8 percent slopes	230	*
CgB	Chautauqua gravelly silt loam, 3 to 8 percent slopes	3,950	1.2
CgC	Chautauqua gravelly silt loam, 8 to 15 percent slopes	1,270	0.4
ChA	Chenango gravelly silt loam, loamy substratum, 0 to 3 percent slopes	730	0.2
ChB	Chenango gravelly silt loam, loamy substratum, 3 to 8 percent slopes	2,000	0.6
ChC	Chenango gravelly silt loam, loamy substratum, rolling	1,300	0.4
ChD	Chenango gravelly silt loam, loamy substratum, hilly	670	0.2
CkB	Chenango channery silt loam, fan, 3 to 8 percent slopes	1,310	0.4
ClA	Claverack loamy fine sand, 0 to 3 percent slopes	280	0.1
ClB	Claverack loamy fine sand, 3 to 8 percent slopes	780	0.2
CoA	Colonie loamy fine sand, 0 to 3 percent slopes	1,260	0.4
CoB	Colonie loamy fine sand, 3 to 8 percent slopes	3,240	1.0
CoC	Colonie loamy fine sand, rolling	8,920	2.6
CoD	Colonie loamy fine sand, hilly	2,120	0.6
CoE	Colonie loamy fine sand, very hilly	930	0.3
Cs	Cosad loamy fine sand	340	0.1
Du	Dumps	620	0.2
ElA	Elmridge fine sandy loam, 0 to 3 percent slopes	920	0.3
ElB	Elmridge fine sandy loam, 3 to 8 percent slopes	1,380	0.4
EnA	Elnora loamy fine sand, 0 to 3 percent slopes	5,220	1.5
EnB	Elnora loamy fine sand, 3 to 8 percent slopes	2,060	0.6
FaB	Farmington silt loam, 0 to 8 percent slopes	3,710	1.1
FrB	Farmington-Rock outcrop complex, 0 to 8 percent slopes	2,690	0.8
FrC	Farmington-Rock outcrop complex, 8 to 15 percent slopes	770	0.2
FrF	Farmington-Rock outcrop complex, 25 to 60 percent slope	3,600	1.1
FwC	Farmington-Wassaic-Rock outcrop complex, rolling	2,670	0.8
Fx	Fluvaquents-Udifluvents complex, frequently flooded	3,670	1.1
Gr	Granby loamy fine sand	2,270	0.7
Ha	Hamlin silt loam	1,360	0.4
HnA	Hornell silt loam, 0 to 3 percent slopes	200	*
HnB	Hornell silt loam, 3 to 8 percent slopes	1,140	0.3
HnC	Hornell silt loam, 8 to 15 percent slopes	280	0.1
HoA	Howard gravelly silt loam, 0 to 3 percent slopes	190	*
HoB	Howard gravelly silt loam, 3 to 8 percent slopes	170	*
HoC	Howard gravelly silt loam, rolling	210	*
HuB	Hudson silt loam, 3 to 8 percent slopes	5,760	1.7
HuC	Hudson silt loam, 8 to 15 percent slopes	1,820	0.5
HuD	Hudson silt loam, hilly	3,510	1.0
HuE	Hudson silt loam, 25 to 45 percent slopes	10,590	3.1
In	Ilion silt loam	3,820	1.1
KeB	Kearsarge silt loam, 0 to 8 percent slopes	14,800	4.4
LaC	Lackawanna channery silt loam, 8 to 15 percent slopes	170	*
LaD	Lackawanna channery silt loam, 15 to 25 percent slopes	890	0.3
LcE	Lackawanna channery silt loam, 15 to 35 percent slopes, very stony	3,390	1.0

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
LoA	Lordstown channery silt loam, 0 to 3 percent slopes	360	0.1
LoB	Lordstown channery silt loam, 3 to 8 percent slopes	5,830	1.7
LoC	Lordstown channery silt loam, 8 to 15 percent slopes	3,760	1.1
LoD	Lordstown channery silt loam, 15 to 25 percent slopes	2,410	0.7
LrE	Lordstown-Arnot complex, 25 to 45 percent slopes, very rocky	5,970	1.8
Ma	Madalin silt loam	1,340	0.4
MbB	Manlius channery silt loam, 3 to 8 percent slopes	360	0.1
MbC	Manlius channery silt loam, 8 to 15 percent slopes	520	0.2
MbD	Manlius channery silt loam, 15 to 25 percent slopes	370	0.1
MbE	Manlius channery silt loam, 25 to 35 percent slopes	890	0.3
Mh	Medihemists and Hydraquents, ponded	1,750	0.5
Mk	Middlebury silt loam	240	*
MoB	Morris channery silt loam, 3 to 8 percent slopes	2,260	0.7
MoC	Morris channery silt loam, 8 to 15 percent slopes	400	0.1
MrB	Morris channery silt loam, 3 to 8 percent slopes, very stony	360	0.1
NaB	Nassau channery silt loam, undulating	2,030	0.6
NaC	Nassau channery silt loam, rolling	1,640	0.5
NrC	Nassau very channery silt loam, rolling, very rocky	470	0.1
NrD	Nassau very channery silt loam, hilly, very rocky	690	0.2
NuB	Nunda silt loam, 3 to 8 percent slopes	11,970	3.5
NuC	Nunda silt loam, 8 to 15 percent slopes	14,730	4.3
NuD	Nunda silt loam, 15 to 25 percent slopes	11,750	3.5
NuE	Nunda silt loam, 25 to 35 percent slopes	3,980	1.2
NvC	Nunda silt loam, 3 to 15 percent slopes, very stony	4,180	1.2
NvE	Nunda silt loam, 15 to 35 percent slopes, very stony	3,050	0.9
OqB	Oquaga channery silt loam, 3 to 8 percent slopes	1,050	0.3
OqC	Oquaga channery silt loam, 8 to 15 percent slopes	530	0.2
OqD	Oquaga channery silt loam, 15 to 25 percent slopes	230	*
Pa	Palms muck	590	0.2
Pm	Pits, gravel	530	0.2
Pn	Pits, quarry	1,660	0.5
Ra	Raynham very fine sandy loam	2,720	0.8
RhA	Rhinebeck silty clay loam, 0 to 3 percent slopes	8,020	2.4
RhB	Rhinebeck silty clay loam, 3 to 8 percent slopes	2,630	0.8
RkA	Riverhead fine sandy loam, 0 to 3 percent slopes	280	0.1
RkB	Riverhead fine sandy loam, 3 to 8 percent slopes	630	0.2
RkC	Riverhead fine sandy loam, 8 to 15 percent slopes	150	*
ScA	Scio silt loam, 0 to 3 percent slopes	1,910	0.6
ScB	Scio silt loam, 3 to 8 percent slopes	3,500	1.0
Sh	Shaker fine sandy loam	1,370	0.4
St	Stafford loamy fine sand	4,000	1.2
SuA	Sudbury fine sandy loam, 0 to 3 percent slopes	510	0.2
SuB	Sudbury fine sandy loam, 3 to 8 percent slopes	330	0.1
Te	Teel silt loam	2,670	0.8
To	Tioga silt loam	280	0.1
TuB	Tuller-Greene complex, 0 to 8 percent slopes	7,090	2.1
Ud	Udipsamments, smoothed	2,070	0.6
Ue	Udipsamments, dredged	230	*
Uf	Udipsamments-Urban land complex	7,610	2.2
Ug	Udorthents, loamy	3,930	1.2
Uh	Udorthents, clayey-Urban land complex	4,090	1.2
Uk	Udorthents, loamy-Urban land complex	2,750	0.8
UnA	Unadilla silt loam, 0 to 3 percent slopes	260	*
UnB	Unadilla silt loam, 3 to 8 percent slopes	1,300	0.4
UnC	Unadilla silt loam, 8 to 15 percent slopes	780	0.2
UnD	Unadilla silt loam, 15 to 25 percent slopes	640	0.2
Ur	Urban land	5,730	1.7
Us	Urban land-Udipsamments complex	1,160	0.3
Ut	Urban land-Udorthents complex	1,180	0.3
VaB	Valois gravelly loam, 3 to 8 percent slopes	1,280	0.4
VaC	Valois gravelly loam, 8 to 15 percent slopes	910	0.3

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
VaD	Valois gravelly loam, 15 to 25 percent slopes	370	0.1
Wa	Wakeland silt loam	570	0.2
WcA	Wassaic silt loam, 0 to 3 percent slopes	380	0.1
WcB	Wassaic silt loam, 3 to 8 percent slopes	3,510	1.0
WcC	Wassaic silt loam, 8 to 15 percent slopes	940	0.3
WnC	Wassaic-Nellis silt loams, rolling, very rocky	1,110	0.3
Wo	Wayland silt loam	2,190	0.6
WrB	Wellsboro silt loam, 3 to 8 percent slopes	1,970	0.6
WrC	Wellsboro silt loam, 8 to 15 percent slopes	3,520	1.0
WrD	Wellsboro silt loam, 15 to 25 percent slopes	130	*
WsC	Wellsboro silt loam, 3 to 15 percent slopes, very stony	3,260	1.0
	Water	1,640	0.5
	Total	339,840	100.0

* Less than 0.1 percent.

TABLE 5.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland. If a soil is prime farmland only under certain conditions, the conditions are specified in parentheses after the soil name)

Map symbol	Soil name
AnA	Angola silt loam, 0 to 3 percent slopes (where drained)
BuA	Burdett silt loam, 0 to 3 percent slopes (where drained)
BxA	Busti silt loam, 0 to 3 percent slopes (where drained)
BxB	Busti silt loam, 3 to 8 percent slopes (where drained)
CeA	Castile gravelly loam, 0 to 3 percent slopes
CeB	Castile gravelly loam, 3 to 8 percent slopes
CgB	Chautauqua gravelly silt loam, 3 to 8 percent slopes
ChA	Chenango gravelly silt loam, loamy substratum, 0 to 3 percent slopes
ChB	Chenango gravelly silt loam, loamy substratum, 3 to 8 percent slopes
CkB	Chenango channery silt loam, fan, 3 to 8 percent slopes
ClA	Claverack loamy fine sand, 0 to 3 percent slopes
ClB	Claverack loamy fine sand, 3 to 8 percent slopes
CoA	Colonie loamy fine sand, 0 to 3 percent slopes
CoB	Colonie loamy fine sand, 3 to 8 percent slopes
ElA	Elmridge fine sandy loam, 0 to 3 percent slopes
ElB	Elmridge fine sandy loam, 3 to 8 percent slopes
EnA	Elnora loamy fine sand, 0 to 3 percent slopes
EnB	Elnora loamy fine sand, 3 to 8 percent slopes
Ha	Hamlin silt loam
HoA	Howard gravelly silt loam, 0 to 3 percent slopes
HoB	Howard gravelly silt loam, 3 to 8 percent slopes
LoA	Lordstown channery silt loam, 0 to 3 percent slopes
LoB	Lordstown channery silt loam, 3 to 8 percent slopes
Mk	Middlebury silt loam (where drained)
Ra	Raynham very fine sandy loam (where drained)
RkA	Riverhead fine sandy loam, 0 to 3 percent slopes
RkB	Riverhead fine sandy loam, 3 to 8 percent slopes
ScA	Scio silt loam, 0 to 3 percent slopes
Sh	Shaker fine sandy loam (where drained)
SuA	Sudbury fine sandy loam, 0 to 3 percent slopes
SuB	Sudbury fine sandy loam, 3 to 8 percent slopes
Te	Teel silt loam
To	Tioga silt loam
UnA	Unadilla silt loam, 0 to 3 percent slopes
VaB	Valois gravelly loam, 3 to 8 percent slopes
Wa	Wakeland silt loam (where drained)
WcA	Wassaic silt loam, 0 to 3 percent slopes
WcB	Wassaic silt loam, 3 to 8 percent slopes

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
Ad------------- Adrian	Vw	---	---	---	---	---	---	---
Ae------------- Allis	IVw	---	---	---	3.0	5.0	70	14
AnA------------- Angola	IIIw	70	---	3.0	2.5	5.5	70	14
AnB------------- Angola	IIIw	70	---	3.0	2.5	5.5	75	15
AnC------------- Angola	IIIe	60	---	3.0	2.5	5.5	70	14
ArC------------- Arnot	IVe	50	2.0	1.5	1.5	2.5	60	12
AsB**----------- Arnot-Rock outcrop	VIs	---	---	---	---	---	---	---
AsF**----------- Arnot-Rock outcrop	VIIs	---	---	---	---	---	---	---
Br-------------- Birdsall	Vw	---	---	---	---	---	---	---
BuA------------- Burdett	IIIw	60	---	3.0	2.5	6.0	80	16
BuB------------- Burdett	IIIw	65	---	3.5	3.0	6.5	95	19
BuC------------- Burdett	IIIe	60	---	3.0	3.0	6.0	75	15
BvB------------- Burdett	VIs	---	---	---	---	---	---	---
BxA, BxB-------- Busti	IIIw	65	3.0	3.0	3.0	5.5	85	17
Ca-------------- Carlisle	Vw	---	---	---	---	---	---	---
CeA------------- Castile	IIw	90	4.0	4.0	3.0	7.5	115	23
CeB------------- Castile	IIw	90	4.0	4.0	3.0	7.5	100	20
CgB------------- Chautauqua	IIw	70	3.5	3.0	3.0	7.5	100	20

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
CgC------------- Chautauqua	IIIe	65	3.5	3.0	2.5	7.5	90	18
ChA------------- Chenango	IIs	80	5.5	4.5	3.0	7.5	100	20
ChB------------- Chenango	IIs	80	5.5	4.5	3.0	7.5	100	20
ChC------------- Chenango	IIIe	75	5.0	4.0	3.0	7.0	90	18
ChD------------- Chenango	IVe	65	---	---	---	---	80	---
CkB------------- Chenango	IIs	80	5.5	4.5	3.0	7.5	100	20
ClA------------- Claverack	IIw	80	3.5	4.0	3.0	7.5	100	20
ClB------------- Claverack	IIw	80	4.0	4.0	3.0	7.5	100	20
CoA, CoB-------- Colonie	IIs	60	4.0	3.0	2.5	5.0	80	16
CoC------------- Colonie	IIIe	50	3.5	2.5	2.5	5.0	70	14
CoD------------- Colonie	IVe	---	---	---	2.5	5.0	---	---
CoE------------- Colonie	VIIe	---	---	---	---	---	---	---
Cs-------------- Cosad	IIIw	75	---	---	3.0	5.5	85	17
Du**. Dumps								
ElA------------- Elmridge	IIw	75	4.5	4.0	3.0	7.6	120	22
ElB------------- Elmridge	IIw	75	4.5	4.0	3.0	7.6	120	22
Ena------------- Elnora	IIIw	65	3.5	3.0	2.5	6.5	80	16
EnB------------- Elnora	IIIw	65	3.5	3.0	2.5	6.5	80	16
FaB------------- Farmington	IIIe	70	---	3.5	---	6.5	70	14
FrB**----------- Farmington-Rock outcrop	VIs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
FrC**------------ Farmington-Rock outcrop	VIs	---	---	---	---	---	---	---
FrF**------------ Farmington-Rock outcrop	VIIs	---	---	---	---	---	---	---
FwC**------------ Farmington-Wassaic-Rock outcrop	VIs	---	---	---	---	---	---	---
Fx**------------- Fluvaquents-Udifluvents	Vw	---	---	---	---	---	---	---
Gr--------------- Granby	Vw	---	---	---	---	---	---	---
Ha--------------- Hamlin	I	80	6.0	5.0	3.5	7.5	120	22
HnA, HnB--------- Hornell	IIIw	65	---	3.0	2.5	5.5	85	17
HnC-------------- Hornell	IIIe	65	---	3.0	2.5	5.5	75	15
HoA, HoB--------- Howard	IIs	80	5.5	4.5	3.0	7.5	105	21
HoC-------------- Howard	IIIe	75	5.0	4.0	3.0	6.5	90	18
HuB-------------- Hudson	IIe	70	5.0	4.0	3.5	7.5	120	24
HuC-------------- Hudson	IIIe	65	4.5	4.0	3.5	7.5	120	22
HuD-------------- Hudson	IVe	60	4.0	3.5	3.0	6.5	---	---
HuE-------------- Hudson	VIIe	---	---	---	---	---	---	---
In--------------- Ilion	IVw	60	---	3.0	2.5	6.5	60	12
KeB-------------- Kearsarge	IIIs	---	3.5	3.0	---	---	---	15
LaC-------------- Lackawanna	IIIe	75	4.5	4.0	3.0	8.0	95	19
LaD-------------- Lackawanna	IVe	70	4.0	3.5	3.0	7.5	90	18
LcE-------------- Lackawanna	VIIs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
LoA------------- Lordstown	IIs	75	3.5	3.0	3.0	6.5	85	17
LoB------------- Lordstown	IIe	75	3.5	3.0	3.0	6.5	85	17
LoC------------- Lordstown	IIIe	70	3.5	3.0	2.5	6.5	85	17
LoD------------- Lordstown	IVe	65	3.0	3.0	2.5	5.5	80	16
LrE------------- Lordstown-Arnot	VIIe	---	---	---	---	---	---	---
Ma-------------- Madalin	IVw	---	---	3.0	3.0	5.5	---	12
MbB------------- Manlius	IIe	70	---	3.0	2.5	6.5	80	16
MbC------------- Manlius	IIIe	65	---	3.0	2.5	6.5	75	15
MbD------------- Manlius	IVe	65	---	2.5	2.5	6.0	70	14
MbE------------- Manlius	VIe	---	---	---	---	4.0	---	---
Mh**------------ Medihemists and Hydraquents	VIIIw	---	---	---	---	---	---	---
Mk-------------- Middlebury	IIw	80	5.0	3.5	3.0	6.5	120	20
MoB------------- Morris	IIIw	65	3.0	3.0	3.0	6.0	80	16
MoC------------- Morris	IIIe	60	3.0	3.0	3.0	6.0	70	14
MrB------------- Morris	VIs	---	---	---	---	---	---	---
NaB------------- Nassau	IIIe	60	---	3.0	2.5	5.5	50	10
NaC------------- Nassau	IVe	55	---	2.5	---	4.5	---	---
NrC, NrD-------- Nassau	VIs	---	---	---	---	---	4.0	---
NuB------------- Nunda	IIe	65	5.5	3.5	3.0	6.0	100	20

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
NuC------------- Nunda	IIIe	50	5.0	3.5	3.0	5.0	85	17
NuD------------- Nunda	IVe	---	4.5	2.5	2.5	5.0	---	---
NuE------------- Nunda	VIe	---	---	---	---	5.0	---	---
NvC------------- Nunda	VIs	---	---	---	---	---	---	---
NvE------------- Nunda	VIIs	---	---	---	---	---	---	---
OqB------------- Oquaga	IIe	75	3.5	3.0	2.5	6.5	86	17
OqC------------- Oquaga	IIIe	70	3.5	3.0	2.5	6.5	85	17
OqD------------- Oquaga	IVe	65	3.0	3.0	2.5	5.5	80	16
Pa-------------- Palms	Vw	---	---	---	---	---	---	---
Pm*, Pn**. Pits								
Ra-------------- Raynham	IIIw	---	---	3.0	2.5	---	60	12
RhA------------- Rhinebeck	IIIw	65	3.0	3.0	2.5	5.5	85	17
RhB------------- Rhinebeck	IIIw	65	3.0	3.0	2.5	5.5	85	17
RkA, RkB-------- Riverhead	IIs	70	5.0	3.0	3.0	5.5	95	19
RkC------------- Riverhead	IIIe	65	4.5	3.0	3.0	5.5	85	17
ScA------------- Scio	IIw	85	5.0	4.0	3.0	8.5	110	22
ScB------------- Scio	IIe	85	5.0	4.0	3.0	8.5	110	22
Sh-------------- Shaker	IIIw	---	---	3.5	3.0	6.6	---	18
St-------------- Stafford	IIIw	65	---	3.5	3.0	6.0	70	14
SuA, SuB-------- Sudbury	IIw	---	3.5	4.0	3.0	---	---	18

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
Te--------------- Teel	IIw	90	4.5	4.0	3.0	6.5	125	24
To--------------- Tioga	I	80	5.0	4.0	3.0	8.5	110	20
TuB-------------- Tuller-Greene	IVw	50	---	---	2.5	4.6	---	---
Ud, Ue. Udipsamments								
Uf**. Udipsamments-Urban land								
Ug. Udorthents								
Uh**, Uk**. Udorthents-Urban land								
UnA-------------- Unadilla	I	75	5.0	3.5	3.0	6.5	115	22
UnB-------------- Unadilla	IIe	75	5.0	3.5	3.0	6.5	115	22
UnC-------------- Unadilla	IIIe	75	4.5	3.5	3.0	6.5	100	20
UnD-------------- Unadilla	IVe	70	4.0	3.0	3.0	6.0	95	19
Ur**. Urban land								
Us**. Urban land-Udipsamments								
Ut**. Urban land-Udorthents								
VaB-------------- Valois	IIe	75	4.0	3.5	3.0	7.5	100	20
VaC-------------- Valois	IIIe	75	4.0	3.5	3.0	7.5	95	19
VaD-------------- Valois	IVe	70	3.5	3.0	3.0	6.5	90	18
Wa--------------- Wakeland	IIw	---	---	4.1	3.0	---	125	---

See footnotes at end of table.

TABLE 6.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Oats	Alfalfa hay	Grass-legume hay	Trefoil-grass hay	Pasture	Corn	Corn silage
		Bu	Tons	Tons	Tons	AUM*	Bu	Tons
WcA------------- Wassaic	IIs	75	4.5	4.5	3.0	8.5	105	20
WcB------------- Wassaic	IIe	75	4.5	4.5	3.0	8.5	105	22
WcC------------- Wassaic	IIIe	70	4.0	4.0	3.0	7.5	95	19
WnC------------- Wassaic-Nellis	VIs	79	4.5	4.2	3.0	7.9	103	21
Wo-------------- Wayland	IVw	---	---	---	2.5	5.0	---	---
WrB------------- Wellsboro	IIw	70	4.0	3.0	2.5	8.0	90	16
WrC------------- Wellsboro	IIIe	65	4.0	3.0	2.5	8.0	85	19
WrD------------- Wellsboro	IVe	65	3.5	3.0	2.5	7.5	80	14
WsC------------- Wellsboro	VIs	---	---	---	---	---	---	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--CAPABILITY CLASSES AND SUBCLASSES

(Miscellaneous areas are excluded. Absence of an entry indicates no acreage)

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	1,900	---	---	---
II	61,500	34,560	16,390	10,550
III	126,940	49,990	62,150	14,800
IV	46,060	32,450	13,610	---
V	7,900	---	7,900	---
VI	24,690	4,870	---	19,820
VII	35,900	17,490	---	18,410
VIII	1,750	---	1,750	---

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Ad-------------- Adrian	2W	Slight	Severe	Severe	Severe	Red maple-----------	51	2	---
						Quaking aspen-------	56	4	
						Eastern cottonwood--	86	6	
						Pin oak-------------	60	3	
Ae-------------- Allis	2W	Slight	Severe	Severe	Severe	Red maple-----------	50	2	---
						Eastern white pine--	55	6	
AnA, AnB, AnC--- Angola	4W	Slight	Moderate	Moderate	Slight	Northern red oak----	70	4	Eastern white pine, Norway spruce, white spruce, European larch.
						Sugar maple---------	60	3	
						White ash-----------	70	3	
ArC------------- Arnot	3D	Slight	Slight	Severe	Moderate	Northern red oak----	55	3	Eastern white pine, red pine.
						Sugar maple---------	50	2	
						Eastern white pine--	50	6	
AsB**:									
Arnot----------	3D	Slight	Slight	Severe	Moderate	Northern red oak----	55	3	Eastern white pine, red pine.
						Sugar maple---------	50	2	
						Eastern white pine--	50	6	
Rock outcrop.									
AsF**:									
Arnot----------	3R	Moderate	Severe	Severe	Moderate	Northern red oak----	55	3	---
						Sugar maple---------	50	2	
						Eastern white pine--	50	6	
Rock outcrop.									
Br-------------- Birdsall	2W	Slight	Severe	Severe	Severe	Red maple-----------	50	2	
BuA, BuB, BuC, BvB------------ Burdett	4W	Slight	Moderate	Moderate	Moderate	Northern red oak----	70	4	European larch, Norway spruce, white spruce, eastern white pine, black locust.
						Sugar maple---------	60	3	
						American beech------	55	---	
						Eastern hemlock-----	---	---	
BxA, BxB-------- Busti	3W	Slight	Moderate	Moderate	Moderate	Sugar maple---------	60	3	Eastern white pine, white spruce, Norway spruce, European larch.
						Northern red oak----	65	3	
						White ash-----------	---	---	
						Eastern hemlock-----	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Ca: Carlisle	2W	Slight	Severe	Severe	Severe	Red maple	50	---	---
						Eastern cottonwood	80	6	
						Swamp white oak	---	---	
CeA, CeB: Castile	3A	Slight	Slight	Slight	Slight	Sugar maple	63	3	Eastern white pine, Norway spruce, white spruce, black locust, European larch.
						Northern red oak	70	4	
						Black cherry	70	3	
CgB, CgC: Chautauqua	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Eastern white pine, Norway spruce, white spruce, European larch, red pine, black locust.
						Northern red oak	70	4	
						Black cherry	70	3	
						White ash	70	3	
ChA, ChB, ChC: Chenango	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, Norway spruce.
						Northern red oak	80	4	
ChD: Chenango	3R	Slight	Moderate	Slight	Slight	Sugar maple	70	3	Eastern white pine, Norway spruce, red pine, European larch, black locust.
						Northern red oak	80	4	
CkB: Chenango	3A	Slight	Slight	Slight	Slight	Sugar maple	70	3	Eastern white pine, red pine, European larch, black locust.
						Northern red oak	80	4	
ClA, ClB: Claverack	3A	Slight	Slight	Slight	Slight	Sugar maple	65	3	Norway spruce, eastern white pine.
						Northern red oak	70	4	
						Eastern white pine	75	10	
CoA, CoB, CoC: Colonie	9S	Slight	Slight	Severe	Slight	Eastern white pine	70	9	Eastern white pine, European larch, red pine, black locust.
						Northern red oak	65	3	
						Sugar maple	55	2	
						White oak	65	3	
						Black oak	65	3	
						Pitch pine	---	---	
						Red maple	---	---	
CoD, CoE: Colonie	8S	Slight	Moderate	Severe	Slight	Eastern white pine	65	8	Eastern white pine, European larch, red pine, black locust.
						Northern red oak	60	3	
						Sugar maple	55	2	
						White oak	60	3	
						Black oak	60	3	
						Pitch pine	---	---	
						Trembling aspen	---	---	
						Red maple	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
Cs-------------- Cosad	3W	Slight	Moderate	Moderate	Moderate	Red maple-----------	70	3	Norway spruce, white spruce, eastern white pine, northern whitecedar.
						Eastern white pine--	70	9	
ElA, ElB-------- Elmridge	10A	Slight	Slight	Slight	Slight	Eastern white pine--	75	10	Eastern white pine, European larch.
						Northern red oak----	70	4	
						White oak-----------	---	---	
Ena, EnB-------- Elnora	3S	Slight	Slight	Severe	Slight	Northern red oak----	60	3	Eastern white pine, Norway spruce.
						Eastern white pine--	65	8	
						Sugar maple---------	55	2	
FaB------------- Farmington	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	Eastern white pine, red pine.
						Northern red oak----	55	3	
						Eastern white pine--	55	6	
						American basswood---	55	2	
						White ash-----------	55	2	
						Eastern hemlock-----	50	---	
						Chestnut oak--------	70	4	
FrB**, FrC**:									
Farmington-----	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	---
						Northern red oak----	55	3	
						Eastern white pine--	55	6	
						American basswood---	55	2	
						White ash-----------	55	2	
						Eastern hemlock-----	50	---	
						Chestnut oak--------	---	---	
Rock outcrop.									
FrF**:									
Farmington-----	2R	Severe	Severe	Severe	Moderate	Sugar maple---------	50	2	---
						Northern red oak----	50	2	
						Eastern white pine--	55	6	
						American basswood---	55	2	
						White ash-----------	55	2	
						Eastern hemlock-----	50	---	
						Chestnut oak--------	---	---	
Rock outcrop.									
FwC**:									
Farmington-----	2D	Slight	Slight	Severe	Moderate	Sugar maple---------	50	2	---
						Northern red oak----	50	2	
						Eastern white pine--	55	6	
						American basswood---	55	2	
						White ash-----------	55	2	
						Eastern hemlock-----	50	---	
Wassaic--------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	73	3	Eastern white pine, red pine.
						Northern red oak----	80	4	
						White ash-----------	70	4	
						Chestnut oak--------	---	---	
Rock outcrop.									

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Gr-------------- Granby	3W	Slight	Severe	Severe	Severe	Red maple-----------	68	3	Eastern white pine, Norway spruce, white spruce.
						American basswood---	---	---	
						White ash-----------	---	---	
						Quaking aspen-------	---	---	
						Eastern cottonwood--	---	---	
Ha-------------- Hamlin	4A	Slight	Slight	Slight	Slight	Northern red oak----	80	4	Eastern white pine, black locust, Norway spruce, black walnut, European larch.
						Sugar maple---------	70	3	
HnA, HnB-------- Hornell	3W	Slight	Moderate	Moderate	Slight	Sugar maple---------	60	3	Eastern white pine, white spruce, Norway spruce.
						White ash-----------	70	3	
						Northern red oak----	70	4	
HnC------------- Hornell	3W	Moderate	Moderate	Moderate	Slight	Sugar maple---------	60	3	Eastern white pine, white spruce, Norway spruce.
						White ash-----------	70	3	
						Northern red oak----	70	4	
HoA, HoB, HoC--- Howard	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, European larch, black locust, red pine, Norway spruce.
						Eastern white pine--	85	10	
						Northern red oak----	80	4	
HuB------------- Hudson	4A	Slight	Slight	Slight	Slight	Northern red oak----	80	4	Eastern white pine, black walnut, black locust, Norway spruce.
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	75	3	
						White oak-----------	---	---	
HuC------------- Hudson	4R	Moderate	Slight	Slight	Slight	Northern red oak----	80	4	Eastern white pine, black walnut, black locust, Norway spruce.
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	75	3	
						White oak-----------	---	---	
HuD------------- Hudson	4R	Severe	Moderate	Slight	Slight	Northern red oak----	80	4	Eastern white pine, black walnut, black locust, Norway spruce.
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	75	3	
						White oak-----------	---	---	
HuE------------- Hudson	4R	Severe	Severe	Slight	Slight	Northern red oak----	80	4	---
						Sugar maple---------	70	3	
						Eastern white pine--	85	10	
						White ash-----------	75	3	
						White oak-----------	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
In------------ Ilion	10W	Slight	Severe	Severe	Severe	Eastern white pine--	75	10	Norway spruce, white spruce.
						Red maple-----------	75	3	
						Eastern hemlock-----	---	---	
KeB------------ Kearsarge	9D	Slight	Slight	Moderate	Severe	Eastern white pine--	70	9	Eastern white pine.
						Northern red oak----	65	3	
						Sugar maple---------	60	3	
						Chestnut oak--------	---	---	
LaC------------ Lackawanna	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	Eastern white pine, red pine, Norway spruce, European larch.
						Sugar maple---------	70	3	
						Red maple-----------	---	---	
						American beech------	---	---	
						Hickory-------------	---	---	
Lad, LcE-------- Lackawanna	4R	Slight	Moderate	Slight	Slight	Northern red oak----	70	4	Eastern white pine, red pine, Norway spruce, European larch.
						Sugar maple---------	70	3	
						Red maple-----------	---	---	
						American beech------	---	---	
						Hickory-------------	---	---	
LoA, LoB, LoC--- Lordstown	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	Eastern white pine, European larch, red pine, Norway spruce.
						Sugar maple---------	73	3	
						White ash-----------	75	3	
						American beech------	---	---	
						Eastern hemlock-----	---	---	
LoD------------ Lordstown	4R	Slight	Moderate	Slight	Slight	Northern red oak----	70	4	Eastern white pine, European larch, red pine, Norway spruce.
						Sugar maple---------	73	3	
						White ash-----------	75	3	
						American beech------	---	---	
						Eastern hemlock-----	---	---	
LrE**:									
Lordstown------	4R	Moderate	Severe	Slight	Slight	Northern red oak----	70	4	Eastern white pine, red pine, Norway spruce.
						Sugar maple---------	73	3	
						White ash-----------	75	3	
						American beech------	---	---	
						Eastern hemlock-----	---	---	
Arnot----------	3R	Moderate	Severe	Severe	Moderate	Northern red oak----	55	3	---
						Sugar maple---------	50	2	
						Eastern white pine--	55	6	
						Eastern hemlock-----	---	---	
						American beech------	---	---	
Ma------------- Madalin	2W	Slight	Severe	Severe	Severe	Red maple-----------	50	2	---
MbB, MbC-------- Manlius	4A	Slight	Slight	Slight	Slight	Northern red oak----	70	4	Eastern white pine, red pine, Norway spruce, European larch.
						Sugar maple---------	70	3	
						American beech------	---	---	
						Eastern hemlock-----	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordi-nation symbol	Management concerns: Erosion hazard	Equip-ment limita-tion	Seedling mortal-ity	Wind-throw hazard	Potential productivity: Common trees	Site index	Produc-tivity class*	Trees to plant
MbD, MbE-------- Manlius	4R	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- American beech------ Eastern hemlock-----	70 70 --- ---	4 3 --- ---	Eastern white pine, red pine, Norway spruce, European larch.
Mk-------------- Middlebury	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- Yellow poplar------- Red maple----------- Eastern white pine--	80 70 85 --- ---	4 3 6 --- ---	Eastern white pine, yellow poplar, Norway spruce, European larch, black walnut, black locust.
MoB, MoC-------- Morris	3W	Slight	Moderate	Moderate	Moderate	Northern red oak---- Sugar maple--------- Eastern hemlock-----	65 79 ---	3 4 ---	Norway spruce, white spruce.
MrB------------- Morris	3W	Slight	Moderate	Moderate	Moderate	Northern red oak---- Sugar maple--------- Eastern hemlock-----	65 79 ---	3 4 ---	Norway spruce, white spruce.
NaB, NaC, NrC--- Nassau	2D	Slight	Slight	Severe	Moderate	Sugar maple--------- Northern red oak---- Eastern white pine--	50 50 55	2 2 6	Eastern white pine, red pine.
NrD------------- Nassau	2D	Slight	Moderate	Severe	Moderate	Sugar maple--------- Northern red oak---- Eastern white pine--	50 50 55	2 2 6	Eastern white pine, red pine.
NuB, NuC-------- Nunda	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- Eastern white pine-- American beech------ Eastern hemlock-----	70 75 --- --- ---	3 4 --- --- ---	Norway spruce, white spruce, eastern white pine, European larch, red pine.
NuD, NuE-------- Nunda	3R	Moderate	Moderate	Moderate	Slight	Sugar maple--------- Northern red oak---- Eastern white pine-- American beech------ Eastern hemlock-----	70 75 --- --- ---	3 4 --- --- ---	Norway spruce, white spruce, eastern white pine, European larch, red pine.
NvC------------- Nunda	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- Eastern white pine-- American beech------ Eastern hemlock-----	70 75 --- --- ---	3 4 --- --- ---	Norway spruce, white spruce, eastern white pine, European larch, red pine.
NvE------------- Nunda	3R	Slight	Moderate	Slight	Slight	Sugar maple--------- Northern red oak---- American beech------ Eastern hemlock-----	70 75 --- ---	3 4 --- ---	Norway spruce, white spruce, eastern white pine, European larch, red pine.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
OqB, OqC-------- Oquaga	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- Black cherry-------- Eastern white pine--	69 71 72 75	3 4 3 10	Eastern white pine, red pine, European larch, Norway spruce.
OqD------------- Oquaga	3R	Slight	Moderate	Slight	Slight	Sugar maple--------- Northern red oak---- Black cherry-------- Eastern white pine--	69 71 72 75	3 4 3 10	Eastern white pine, red pine, European larch, Norway spruce.
Pa-------------- Palms	2W	Slight	Severe	Severe	Severe	Red maple----------- Quaking aspen-------	51 56	2 4	---
Ra-------------- Raynham	3W	Slight	Severe	Moderate	Severe	Red maple----------- Eastern white pine-- Elm----------------- Eastern hemlock-----	65 65 --- ---	3 8 --- ---	---
Rha, RhB-------- Rhinebeck	3W	Slight	Moderate	Slight	Slight	Sugar maple--------- Northern red oak---- Eastern white pine-- Red maple-----------	65 70 75 70	3 4 10 3	Eastern white pine, Norway spruce, European larch, white spruce.
RkA, RkB, RkC--- Riverhead	3A	Slight	Slight	Slight	Slight	Sugar maple--------- Northern red oak---- Black cherry-------- Eastern white pine--	63 70 70 75	3 4 3 10	Eastern white pine, Norway spruce, red pine, European larch.
ScA, ScB-------- Scio	4A	Slight	Slight	Slight	Slight	Northern red oak---- White ash----------- Sugar maple--------- Black cherry-------- Eastern hemlock----- Eastern white pine--	75 85 70 80 70 85	4 4 3 4 --- 10	European larch, eastern white pine, red pine, Norway spruce, white spruce.
Sh-------------- Shaker	7W	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----------- Sugar maple---------	57 55 55	7 2 2	Eastern white pine, white spruce, Norway spruce.
St-------------- Stafford	3W	Slight	Moderate	Moderate	Moderate	Red maple----------- Eastern hemlock----- Eastern white pine--	65 55 65	3 --- 8	Eastern white pine, white spruce, northern whitecedar, Norway spruce.

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
SuA, SuB--------Sudbury	7A	Slight	Slight	Slight	Slight	Eastern white pine--	60	7	Eastern white pine, red pine, European larch, white spruce, Norway spruce.
						Northern red oak----	45	2	
						Black cherry--------	---	---	
						Sugar maple---------	---	---	
Te--------------Teel	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, black walnut, European larch.
						Eastern white pine--	85	10	
						White ash-----------	85	4	
						Red maple-----------	---	---	
To--------------Tioga	4A	Slight	Slight	Slight	Slight	Northern red oak----	75	4	Eastern white pine, yellow poplar, black walnut, European larch, black locust, red pine.
						Yellow poplar-------	85	6	
						Sugar maple---------	67	3	
TuB**:									
Tuller---------	2W	Slight	Severe	Severe	Severe	Red maple-----------	55	2	White spruce, Norway spruce.
						American beech------	---	---	
						American elm--------	---	---	
						Eastern hemlock-----	45	---	
Greene---------	2W	Slight	Severe	Severe	Severe	Red maple-----------	55	2	White spruce, Norway spruce.
						Eastern hemlock-----	45	---	
						Northern whitecedar-	40	---	
						Yellow birch--------	50	2	
						Eastern white pine--	55	6	
UnA, UnB--------Unadilla	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, black locust, European larch, red pine, white spruce.
						Eastern white pine--	85	10	
						Northern red oak----	80	4	
						Black cherry--------	75	3	
						White ash-----------	80	4	
UnC-------------Unadilla	3R	Moderate	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, black cherry, European larch, red pine, white spruce.
						Eastern white pine--	85	10	
						Northern red oak----	80	4	
						Black cherry--------	75	3	
						White ash-----------	80	4	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
UnD-------------- Unadilla	3R	Severe	Moderate	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Norway spruce, black cherry, European larch, red pine, white spruce.
						Eastern white pine--	80	10	
						Northern red oak----	75	4	
						Black cherry--------	70	3	
						White ash-----------	75	3	
VaB, VaC-------- Valois	3A	Slight	Slight	Slight	Slight	Sugar maple---------	61	3	Eastern white pine, white spruce, Norway spruce, red pine, European larch, black locust.
						Northern red oak----	70	4	
						White ash-----------	70	3	
						American basswood---	70	3	
						Eastern white pine--	---	---	
						Eastern hemlock-----	---	---	
						American beech------	---	---	
VaD------------- Valois	3R	Slight	Moderate	Slight	Slight	Sugar maple---------	61	3	Eastern white pine, white spruce, Norway spruce, red pine, European larch, black locust.
						Northern red oak----	70	4	
						White ash-----------	70	3	
						American basswood---	70	3	
						Eastern white pine--	---	---	
						Eastern hemlock-----	---	---	
						American beech------	---	---	
Wa-------------- Wakeland	5A	Slight	Slight	Slight	Slight	Black oak-----------	---	---	Eastern white pine, Norway spruce, white spruce.
						Northern red oak----	---	---	
						Red maple-----------	---	---	
						Eastern white pine--	---	---	
WcA, WcB, WcC--- Wassaic	3A	Slight	Slight	Slight	Slight	Sugar maple---------	73	3	Eastern white pine, red pine, European larch, Norway spruce, black locust.
						Northern red oak----	80	4	
						White ash-----------	85	4	
WnC**:									
Wassaic---------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	73	3	Eastern white pine, red pine, European larch, Norway spruce.
						Northern red oak----	80	4	
						White ash-----------	85	4	
Nellis----------	3A	Slight	Slight	Slight	Slight	Sugar maple---------	70	3	Eastern white pine, Austrian pine, Norway spruce, black walnut, European larch.
						Northern red oak----	80	4	
						American basswood---	80	4	
						Eastern white pine--	85	10	
						White ash-----------	85	4	
Wo-------------- Wayland	3W	Slight	Severe	Severe	Severe	Red maple-----------	65	3	---

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
WrB, WrC-------- Wellsboro	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- American beech------	78 70 ---	4 3 ---	Norway spruce, eastern white pine, European larch.
WrD------------- Wellsboro	4R	Slight	Moderate	Slight	Slight	Northern red oak---- Sugar maple--------- American beech------	78 70 ---	4 3 ---	Norway spruce, eastern white pine, European larch.
WsC------------- Wellsboro	4A	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple--------- American beech------ White ash----------- Black cherry--------	78 70 --- --- ---	4 3 --- --- ---	Norway spruce, eastern white pine, red pine, European larch.

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ad------------------- Adrian	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: flooding, ponding, excess humus.
Ae------------------- Allis	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
AnA, AnB------------- Angola	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
AnC------------------ Angola	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
ArC------------------ Arnot	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones, thin layer.
AsB*:					
Arnot----------------	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: small stones.	Severe: small stones.	Severe: small stones, thin layer.
Rock outcrop.					
AsF*:					
Arnot----------------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones, slope, thin layer.
Rock outcrop.					
Br------------------- Birdsall	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: wetness, ponding.	Severe: ponding.
BuA, BuB------------- Burdett	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
BuC------------------ Burdett	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: wetness, erodes easily.	Severe: wetness.
BvB------------------ Burdett	Severe: wetness.	Severe: wetness.	Severe: large stones, small stones.	Severe: wetness.	Severe: wetness.
BxA, BxB------------- Busti	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ca: Carlisle	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
CeA, CeB: Castile	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.	Moderate: small stones, wetness.
CgB: Chautauqua	Moderate: small stones, wetness.	Moderate: wetness, small stones.	Severe: small stones.	Moderate: wetness.	Moderate: small stones.
CgC: Chautauqua	Moderate: slope, small stones.	Moderate: slope, wetness.	Severe: slope, small stones.	Moderate: wetness.	Moderate: small stones, slope.
ChA, ChB: Chenango	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones.
ChC: Chenango	Severe: flooding.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, large stones, slope.
ChD: Chenango	Severe: flooding, slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
CkB: Chenango	Severe: flooding.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, large stones, droughty.
ClA, ClB: Claverack	Severe: percs slowly.	Severe: percs slowly.	Severe: percs slowly.	Moderate: wetness.	Moderate: wetness, droughty.
CoA: Colonie	Slight	Slight	Slight	Slight	Moderate: droughty.
CoB: Colonie	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
CoC: Colonie	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: droughty, slope.
CoD: Colonie	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
CoE: Colonie	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Cs: Cosad	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Du*. Dumps					
ElA------------------- Elmridge	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
ElB------------------- Elmridge	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
EnA------------------- Elnora	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
EnB------------------- Elnora	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty.
FaB------------------- Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
FrB*:					
Farmington-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Severe: thin layer.
Rock outcrop.					
FrC*:					
Farmington-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight----------	Severe: thin layer.
Rock outcrop.					
FrF*:					
Farmington-----------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, thin layer.
Rock outcrop.					
FwC*:					
Farmington-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight----------	Severe: thin layer.
Wassaic--------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope, thin layer.
Rock outcrop.					
Fx*:					
Fluvaquents.					
Udifluvents.					

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Gr: Granby	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Ha: Hamlin	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
HnA, HnB: Hornell	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, erodes easily.	Severe: wetness.
HnC: Hornell	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: slope, wetness. percs slowly.	Severe: wetness, erodes easily.	Severe: wetness.
HoA, HoB: Howard	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones.
HoC: Howard	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones.
HuB: Hudson	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
HuC: Hudson	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
HuD: Hudson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
HuE: Hudson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
In: Ilion	Severe: ponding, percs slowly, excess humus.	Severe: ponding, excess humus, percs slowly.	Severe: excess humus.	Severe: ponding, excess humus, erodes easily.	Severe: ponding.
KeB: Kearsarge	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: erodes easily.	Severe: thin layer.
LaC: Lackawanna	Moderate: slope, small stones.	Moderate: small stones, slope.	Severe: small stones, slope.	Slight	Moderate: small stones, slope.
LaD: Lackawanna	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Moderate: slope.	Severe: slope.
LcE: Lackawanna	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LoA, LoB: Lordstown	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: large stones.
LoC: Lordstown	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: large stones, slope.
LoD: Lordstown	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
LrE*:					
Lordstown	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Arnot	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: small stones, slope, thin layer.
Ma: Madalin	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
MbB: Manlius	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
MbC: Manlius	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: small stones, slope.	Slight	Moderate: small stones, droughty.
MbD: Manlius	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Moderate: slope.	Severe: slope.
MbE: Manlius	Severe: slope.	Severe: slope.	Severe: small stones, slope.	Severe: slope.	Severe: slope.
Mh*:					
Medihemists.					
Hydraquents.					
Mk: Middlebury	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MoB: Morris	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
MoC: Morris	Severe: wetness.	Severe: wetness.	Severe: slope, small stones, wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MrB------------------ Morris	Severe: wetness.	Severe: wetness.	Severe: wetness, large stones.	Severe: wetness.	Severe: wetness.
NaB------------------ Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.	Slight----------	Severe: thin layer.
NaC------------------ Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones.	Slight----------	Severe: thin layer.
NrC------------------ Nassau	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones.	Slight----------	Severe: small stones, thin layer.
NrD------------------ Nassau	Severe: slope, depth to rock, small stones.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.	Moderate: slope.	Severe: small stones, slope, thin layer.
NuB------------------ Nunda	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Severe: erodes easily.	Moderate: wetness.
NuC------------------ Nunda	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Severe: erodes easily.	Moderate: wetness, slope.
NuD------------------ Nunda	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
NuE------------------ Nunda	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
NvC------------------ Nunda	Moderate: slope, large stones, wetness.	Moderate: slope, wetness, large stones.	Severe: large stones, slope, small stones.	Severe: small stones.	Severe: small stones.
NvE------------------ Nunda	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope, small stones.	Severe: small stones, slope.
OqB------------------ Oquaga	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight----------	Severe: small stones.
OqC------------------ Oquaga	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight----------	Severe: small stones.
OqD------------------ Oquaga	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope.	Severe: small stones, slope.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Pa: Palms	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Pm*, Pn*. Pits					
Ra: Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
RhA, RhB: Rhinebeck	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
RkA: Riverhead	Slight	Slight	Slight	Slight	Slight.
RkB: Riverhead	Slight	Slight	Moderate: slope.	Slight	Slight.
RkC: Riverhead	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
ScA: Scio	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
ScB: Scio	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: erodes easily, wetness.	Moderate: wetness.
Sh: Shaker	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
St: Stafford	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
SuA: Sudbury	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, small stones.	Slight	Moderate: droughty.
SuB: Sudbury	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, small stones.	Slight	Moderate: droughty.
Te: Teel	Severe: flooding.	Moderate: wetness.	Moderate: wetness, flooding.	Severe: erodes easily.	Moderate: wetness, flooding.
To: Tioga	Severe: flooding.	Slight	Moderate: flooding.		Moderate: flooding.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
TuB*:					
Tuller	Severe: wetness, depth to rock.	Severe: wetness, depth to rock.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness, thin layer.
Greene	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
Ud*, Ue*. Udipsamments					
Uf*: Udipsamments.					
Urban land.					
Ug*. Udorthents					
Uh*, Uk*: Udorthents.					
Urban land.					
UnA Unadilla	Slight	Slight	Slight	Slight	Slight.
UnB Unadilla	Slight	Slight	Moderate: slope.	Moderate: erodes easily.	Slight.
UnC Unadilla	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
UnD Unadilla	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Ur*. Urban land					
Us*: Urban land.					
Udipsamments.					
Ut*: Urban land.					
Udorthents.					
VaB Valois	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight	Moderate: small stones, droughty.
VaC Valois	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight	Moderate: small stones, droughty.

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
VaD: Valois	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Wa: Wakeland	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, flooding.
WcA: Wassaic	Slight	Slight	Moderate: small stones.	Slight	Moderate: thin layer.
WcB: Wassaic	Slight	Slight	Moderate: slope, small stones.	Slight	Moderate: thin layer.
WcC: Wassaic	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, thin layer.
WnC*:					
Wassaic	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, thin layer.
Nellis	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope, droughty.
Wo: Wayland	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: wetness, excess humus, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding.
WrB: Wellsboro	Moderate: percs slowly, wetness.	Moderate: wetness, percs slowly.	Moderate: slope, small stones.	Severe: slope.	Moderate: large stones.
WrC: Wellsboro	Moderate: slope, percs slowly, wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: slope.	Moderate: slope, large stones.
WrD: Wellsboro	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
WsC: Wellsboro	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: wetness.	Moderate: large stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Ad: Adrian	Poor	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
Ae: Allis	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
AnA: Angola	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
AnB: Angola	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
AnC: Angola	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ArC: Arnot	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
AsB*:										
Arnot	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
AsF*:										
Arnot	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
Br: Birdsall	Very poor.	Poor	Poor	Poor	Poor	Good	Fair	Poor	Poor	Fair.
BuA: Burdett	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
BuB: Burdett	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
BuC: Burdett	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
BvB: Burdett	Very poor.	Poor	Good	Good	Good	Poor	Very poor.	Poor	Good	Very poor.
BxA: Busti	Fair	Fair	Good	Good	Good	Fair	Fair	Fair	Fair	Fair.
BxB: Busti	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Fair	Poor.
Ca: Carlisle	Fair	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
CeA----------------- Castile	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
CeB----------------- Castile	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
CgB----------------- Chautauqua	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
CgC----------------- Chautauqua	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ChA, ChB----------- Chenango	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
ChC----------------- Chenango	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
ChD----------------- Chenango	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
CkB----------------- Chenango	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
ClA, ClB----------- Claverack	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Poor.
CoA, CoB, CoC, CoD- Colonie	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
CoE----------------- Colonie	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Cs------------------ Cosad	Fair	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair.
Du*. Dumps										
ElA----------------- Elmridge	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ElB----------------- Elmridge	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
EnA----------------- Elnora	Fair	Good	Good	Fair	Fair	Poor	Poor	Good	Fair	Poor.
EnB----------------- Elnora	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
FaB----------------- Farmington	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
FrB*, FrC*:										
Farmington---------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
FrF*:										
Farmington--------	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
FwC*:										
Farmington--------	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Wassaic-----------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Rock outcrop.										
Fx*:										
Fluvaquents.										
Udifluvents.										
Gr----------------- Granby	Poor	Poor	Poor	Fair	Fair	Good	Good	Poor	Poor	Good.
Ha----------------- Hamlin	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HnA---------------- Hornell	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
HnB---------------- Hornell	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HnC---------------- Hornell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HoA, HoB, HoC------ Howard	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
HuB---------------- Hudson	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HuC---------------- Hudson	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HuD---------------- Hudson	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
HuE---------------- Hudson	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
In----------------- Ilion	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor	Fair	Good.
KeB---------------- Kearsarge	Poor	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
LaC: Lackawanna	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LaD: Lackawanna	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LcE: Lackawanna	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
LoA, LoB: Lordstown	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC: Lordstown	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LoD: Lordstown	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
LrE*:										
Lordstown	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Fair	Very poor.
Arnot	Very poor.	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Ma: Madalin	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
MbB: Manlius	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
MbC: Manlius	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
MbD: Manlius	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
MbE: Manlius	Very poor.	Fair	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Mh*:										
Medihemists.										
Hydraquents.										
Mk: Middlebury	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
MoB: Morris	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
MoC: Morris	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
MrB: Morris	Very poor.	Poor	Good	Fair	Fair	Poor	Very poor.	Poor	Fair	Very poor.
NaB, NaC, NrC, NrD: Nassau	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herba-ceous plants	Hardwood trees	Conif-erous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
NuB: Nunda	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
NuC: Nunda	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
NuD, NuE: Nunda	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
NvC, NvE: Nunda	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
OqB: Oquaga	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
OqC: Oquaga	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
OqD: Oquaga	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Pa: Palms	Good	Poor	Poor	Poor	Poor	Good	Good	Fair	Poor	Good.
Pm*, Pn*. Pits										
Ra: Raynham	Poor	Poor	Fair	Fair	Fair	Good	Fair	Poor	Fair	Fair.
RhA: Rhinebeck	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
RhB: Rhinebeck	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RkA: Riverhead	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
RkB, RkC: Riverhead	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
ScA: Scio	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
ScB: Scio	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sh: Shaker	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
St: Stafford	Poor	Fair	Fair	Poor	Poor	Fair	Poor	Fair	Poor	Poor.
SuA: Sudbury	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
SuB: Sudbury	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Te: Teel	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
To: Tioga	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
TuB*:										
Tuller	Very poor.	Poor	Poor	Very poor.	Very poor.	Poor	Very poor.	Poor	Very poor.	Very poor.
Greene	Fair	Fair	Fair	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
Ud*, Ue*. Udipsamments										
Uf*:										
Udipsamments.										
Urban land.										
Ug*. Udorthents										
Uh*, Uk*:										
Udorthents.										
Urban land.										
UnA, UnB: Unadilla	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
UnC: Unadilla	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
UnD: Unadilla	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Ur*. Urban land										
Us*:										
Urban land.										
Udipsamments.										
Ut*:										
Urban land.										
Udorthents.										
VaB: Valois	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
VaC-----------------Valois	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
VaD-----------------Valois	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wa------------------Wakeland	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
WcA, WcB------------Wassaic	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WcC-----------------Wassaic	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WnC*:										
Wassaic------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Nellis-------------	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Wo------------------Wayland	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
WrB-----------------Wellsboro	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
WrC-----------------Wellsboro	Fair	Good	Good	Fair	Fair	Very poor.	Very poor.	Good	Fair	Very poor.
WrD-----------------Wellsboro	Poor	Fair	Good	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
WsC-----------------Wellsboro	Very poor.	Poor	Good	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ad: Adrian	Severe: cutbanks cave, ponding, excess humus.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: subsides, flooding, ponding.	Severe: flooding, ponding, excess humus.
Ae: Allis	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
AnA, AnB: Angola	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
AnC: Angola	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: wetness, frost action.	Severe: wetness.
ArC: Arnot	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, thin layer.
AsB*:						
Arnot	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, thin layer.
Rock outcrop.						
AsF*:						
Arnot	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: small stones, slope, thin layer.
Rock outcrop.						
Br: Birdsall	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.
BuA, BuB: Burdett	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
BuC: Burdett	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: wetness, frost action.	Severe: wetness.
BvB: Burdett	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
BxA, BxB: Busti	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Ca: Carlisle	Severe: excess humus, ponding.	Severe: flooding, ponding, subsides.	Severe: flooding, ponding, subsides.	Severe: flooding, ponding, subsides.	Severe: ponding, flooding, subsides.	Severe: ponding, flooding, excess humus.
CeA: Castile	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: small stones, wetness.
CeB: Castile	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: small stones, wetness.
CgB: Chautauqua	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: small stones.
CgC: Chautauqua	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: frost action, wetness, slope.	Moderate: small stones, slope.
ChA: Chenango	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Moderate: small stones, large stones.
ChB: Chenango	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, large stones.
ChC: Chenango	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, large stones.
ChD: Chenango	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
CkB: Chenango	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Moderate: small stones, large stones, droughty.
ClA: Claverack	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
ClB: Claverack	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
CoA: Colonie	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
CoB: Colonie	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CoC---------------- Colonie	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
CoD, CoE---------- Colonie	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Cs----------------- Cosad	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Du*. Dumps						
ElA---------------- Elmridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength, frost action.	Moderate: wetness.
ElB---------------- Elmridge	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength, frost action.	Moderate: wetness.
EnA---------------- Elnora	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
EnB---------------- Elnora	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness, droughty.
FaB---------------- Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
FrB*:						
Farmington--------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
FrC*:						
Farmington--------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
FrF*:						
Farmington--------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop.						
FwC*:						
Farmington--------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
FwC*:						
Wassaic----------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Moderate: slope, thin layer.
Rock outcrop.						
Fx*:						
Fluvaquents.						
Udifluvents.						
Gr---------------- Granby	Severe: cutbanks cave, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
Ha---------------- Hamlin	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
HnA, HnB---------- Hornell	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
HnC--------------- Hornell	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Severe: low strength, wetness.	Severe: wetness.
HoA--------------- Howard	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Moderate: frost action.	Moderate: small stones.
HoB--------------- Howard	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Moderate: small stones.
HoC--------------- Howard	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, slope.
HuB--------------- Hudson	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: frost action, low strength.	Moderate: wetness.
HuC--------------- Hudson	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: frost action, low strength.	Moderate: wetness, slope.
HuD, HuE---------- Hudson	Severe: slope, wetness.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action, low strength.	Severe: slope.
In---------------- Ilion	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding, frost action.	Severe: ponding.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
KeB: Kearsarge	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
LaC: Lackawanna	Moderate: wetness, slope.	Moderate: slope.	Moderate: wetness, slope.	Moderate: slope.	Moderate: frost action, slope.	Moderate: small stones, slope.
LaD, LcE: Lackawanna	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
LoA: Lordstown	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock, frost action.	Moderate: large stones.
LoB: Lordstown	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: large stones.
LoC: Lordstown	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: large stones, slope.
LoD: Lordstown	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
LrE*:						
Lordstown	Severe: slope, depth to rock.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Arnot	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: small stones, slope, thin layer.
Ma: Madalin	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength, frost action.	Severe: wetness.
MbB: Manlius	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: small stones, droughty.
MbC: Manlius	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Moderate: small stones, droughty.
MbD, MbE: Manlius	Severe: depth to rock, slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.	Severe: slope.	Severe: slope.
Mh*:						
Medihemists.						
Hydraquents.						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Mk---------------- Middlebury	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
MoB--------------- Morris	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.
MoC--------------- Morris	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: slope, wetness.	Severe: frost action, wetness.	Severe: wetness.
MrB--------------- Morris	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.
NaB--------------- Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
NaC--------------- Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
NrC--------------- Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, thin layer.
NrD--------------- Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe small stones, slope, thin layer.
NuB--------------- Nunda	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
NuC--------------- Nunda	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
NuD, NuE---------- Nunda	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
NvC--------------- Nunda	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Severe: small stones.
NvE--------------- Nunda	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: small stones, slope.
OqB--------------- Oquaga	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Severe: small stones.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
OqC: Oquaga	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: slope, depth to rock, frost action.	Severe: small stones.
OqD: Oquaga	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Pa: Palms	Severe: excess humus, ponding.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: subsides, ponding, low strength.	Severe: ponding, frost action, subsides.	Severe: ponding, excess humus.
Pm*, Pn*. Pits						
Ra: Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.
RhA, RhB: Rhinebeck	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, frost action, wetness.	Severe: wetness.
RkA: Riverhead	Severe: cutbanks cave.	Slight	Slight	Slight	Moderate: frost action.	Slight.
RkB: Riverhead	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
RkC: Riverhead	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
ScA: Scio	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
ScB: Scio	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
Sh: Shaker	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness, frost action.	Severe: wetness.
St: Stafford	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, droughty.
SuA: Sudbury	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: droughty.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SuB--------------- Sudbury	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: wetness, frost action.	Moderate: droughty.
Te---------------- Teel	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: wetness, flooding.
To---------------- Tioga	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
TuB*:						
Tuller-----------	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, frost action.	Severe: wetness, thin layer.
Greene-----------	Severe: depth to rock, wetness.	Severe: wetness.	Severe: wetness, depth to rock.	Severe: wetness.	Severe: wetness, frost action, low strength.	Severe: wetness.
Ud*, Ue*. Udipsamments						
Uf*: Udipsamments.						
Urban land.						
Ug*. Udorthents						
Uh*, Uk*: Udorthents.						
Urban land.						
UnA--------------- Unadilla	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Severe: frost action.	Slight.
UnB--------------- Unadilla	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Severe: frost action.	Slight.
UnC--------------- Unadilla	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: frost action.	Moderate: slope.
UnD--------------- Unadilla	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Ur*. Urban land						
Us*: Urban land.						
Udipsamments.						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ut*:						
Urban land.						
Udorthents.						
VaB: Valois	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Moderate: small stones, droughty.
VaC: Valois	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: small stones, droughty.
VaD: Valois	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wa: Wakeland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
WcA: Wassaic	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.	Moderate: thin layer.
WcB: Wassaic	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: thin layer.
WcC: Wassaic	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Moderate: slope, thin layer.
WnC*:						
Wassaic	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Moderate: slope, thin layer.
Nellis	Moderate: dense layer, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope, droughty.
Wo: Wayland	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
WrB: Wellsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Severe: frost action.	Moderate: large stones.
WrC: Wellsboro	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: slope, large stones.
WrD: Wellsboro	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
WsC: Wellsboro	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: large stones, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Ad: Adrian	Severe: subsides, flooding, ponding.	Severe: seepage, flooding, ponding.	Severe: seepage, flooding, ponding.	Severe: seepage, flooding, ponding.	Poor: ponding, too sandy.
Ae: Allis	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness, too clayey.	Severe: depth to rock, wetness.	Poor: area reclaim, too clayey, small stones.
AnA, AnB: Angola	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, wetness.
AnC: Angola	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, wetness.
ArC: Arnot	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
AsB*:					
Arnot	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
Rock outcrop.					
AsF*:					
Arnot	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Rock outcrop.					
Br: Birdsall	Severe: ponding, percs slowly.	Slight	Severe: ponding.	Severe: ponding.	Poor: ponding.
BuA: Burdett	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
BuB: Burdett	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
BuC----------------- Burdett	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
BvB----------------- Burdett	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
BxA, BxB------------ Busti	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, small stones.
Ca------------------ Carlisle	Severe: flooding, ponding, subsides.	Severe: seepage, flooding, excess humus.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: ponding, excess humus.
CeA, CeB------------ Castile	Severe: wetness, poor filter.	Severe: wetness, seepage.	Severe: wetness, seepage, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
CgB----------------- Chautauqua	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Severe: small stones.
CgC----------------- Chautauqua	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: small stones.
ChA----------------- Chenango	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
ChB----------------- Chenango	Moderate: Percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
ChC----------------- Chenango	Moderate: flooding, percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: seepage, small stones.
ChD----------------- Chenango	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: seepage, small stones, slope.
CkB----------------- Chenango	Severe: wetness, poor filter.	Severe: flooding, seepage.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: small stones, seepage.
ClA, ClB------------ Claverack	Severe: wetness, percs slowly, poor filter.	Severe: seepage, wetness.	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey.
CoA, CoB------------ Colonie	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
CoC: Colonie	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy.
CoD, CoE: Colonie	Severe: poor filter, slope.	Severe: slope, seepage.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: too sandy, slope.
Cs: Cosad	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: wetness, too clayey.	Severe: seepage, wetness.	Poor: too clayey, wetness.
Du*. Dumps					
ElA: Elmridge	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
ElB: Elmridge	Severe: wetness, percs slowly.	Moderate: slope.	Severe: wetness, too clayey.	Severe: seepage.	Poor: too clayey, hard to pack.
EnA, EnB: Elnora	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: too sandy.
FaB: Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
FrB*:					
Farmington	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop.					
FrC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.
Rock outcrop.					
FrF*:					
Farmington	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Rock outcrop.					
FwC*:					
Farmington	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
FwC*:					
Wassaic	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, thin layer.
Rock outcrop.					
Fx*:					
Fluvaquents.					
Udifluvents.					
Gr Granby	Severe: ponding, poor filter.	Severe: seepage, ponding.	Severe: seepage, ponding, too sandy.	Severe: seepage, ponding.	Poor: seepage, too sandy, ponding.
Ha Hamlin	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
HnA, HnB Hornell	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, too clayey, hard to pack.
HnC Hornell	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, slope, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, too clayey, hard to pack.
HoA, HoB Howard	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
HoC Howard	Severe: poor filter.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
HuB Hudson	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness, too clayey.	Moderate: wetness.	Poor: too clayey, hard to pack.
HuC Hudson	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
HuD, HuE Hudson	Severe: slope, percs slowly, wetness.	Severe: slope.	Severe: slope, too clayey, wetness.	Severe: slope.	Poor: slope, too clayey, hard to pack.
In Ilion	Severe: ponding, percs slowly.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Poor: ponding, small stones.
KeB Kearsarge	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LaC: Lackawanna	Severe: percs slowly.	Severe: slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Poor: small stones.
LaD, LcE: Lackawanna	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
LoA, LoB: Lordstown	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
LoC: Lordstown	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
LoD: Lordstown	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Poor: area reclaim, slope, small stones.
LrE*:					
Lordstown	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Poor: area reclaim, slope, small stones.
Arnot	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Ma: Madalin	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey, hard to pack.
MbB: Manlius	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, seepage, small stones.
MbC: Manlius	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, seepage, small stones.
MbD, MbE: Manlius	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Poor: area reclaim, seepage, small stones.
Mh*:					
Medihemists.					
Hydraquents.					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Mk: Middlebury	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness, seepage.	Severe: flooding, wetness.	Poor: wetness.
MoB: Morris	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
MoC: Morris	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness, small stones.
MrB: Morris	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Severe: wetness.	Poor: wetness.
NaB: Nassau	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
NaC, NrC: Nassau	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
NrD: Nassau	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Poor: slope, area reclaim, small stones.
NuB: Nunda	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, small stones.
NuC: Nunda	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, small stones, slope.
NuD, NuE: Nunda	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
NvC: Nunda	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness, slope.	Fair: too clayey, small stones, slope.
NvE: Nunda	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
OqB: Oquaga	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
OqC----------------- Oquaga	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, small stones.
OqD----------------- Oquaga	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope.
Pa------------------ Palms	Severe: subsides, ponding, percs slowly.	Severe: seepage, excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, seepage.	Poor: ponding, excess humus.
Pm*, Pn*. Pits					
Ra------------------ Raynham	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
RhA----------------- Rhinebeck	Severe: percs slowly, wetness.	Slight-----------	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
RhB----------------- Rhinebeck	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
RkA, RkB------------ Riverhead	Severe: poor filter.	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
RkC----------------- Riverhead	Severe: poor filter.	Severe: slope, seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
ScA, ScB------------ Scio	Severe: wetness.	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Fair: wetness, thin layer.
Sh------------------ Shaker	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness, too clayey.	Severe: wetness, seepage.	Poor: too clayey, wetness, hard to pack.
St------------------ Stafford	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: seepage, wetness, too sandy.	Severe: seepage, wetness.	Poor: seepage, too sandy, wetness.
SuA, SuB------------ Sudbury	Severe: wetness, poor filter.	Severe: wetness, seepage.	Severe: wetness, too sandy.	Severe: wetness, seepage.	Poor: seepage, too sandy, small stones.
Te------------------ Teel	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
To------------------ Tioga	Severe: flooding, wetness, poor filter.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: thin layer.
TuB*:					
Tuller--------------	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, wetness, small stones.
Greene--------------	Severe: depth to rock, wetness, percs slowly.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Severe: depth to rock, wetness.	Poor: area reclaim, wetness.
Ud*, Ue*. Udipsamments					
Uf*: Udipsamments.					
Urban land.					
Ug*. Udorthents					
Uh*, Uk*: Udorthents.					
Urban land.					
UnA, UnB------------ Unadilla	Slight--------------	Severe: seepage.	Severe: seepage.	Slight--------------	Fair: thin layer.
UnC----------------- Unadilla	Moderate: slope.	Severe: slope, seepage.	Severe: seepage.	Moderate: slope.	Fair: slope, thin layer.
UnD----------------- Unadilla	Severe: slope.	Severe: slope, seepage.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
Ur*. Urban land					
Us*: Urban land.					
Udipsamments.					
Ut*: Urban land.					
Udorthents.					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
VaB: Valois	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
VaC: Valois	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: small stones.
VaD: Valois	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
Wa: Wakeland	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
WcA, WcB: Wassaic	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, thin layer.
WcC: Wassaic	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, thin layer.
WnC*:					
Wassaic	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: area reclaim, thin layer.
Nellis	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
Wo: Wayland	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
WrB: Wellsboro	Severe: percs slowly, wetness.	Moderate: slope.	Severe: wetness.	Moderate: wetness.	Poor: small stones.
WrC: Wellsboro	Severe: percs slowly, wetness.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Poor: small stones.
WrD: Wellsboro	Severe: slope, percs slowly, wetness.	Severe: slope.	Severe: slope, wetness.	Severe: slope, wetness.	Poor: slope, small stones.
WsC: Wellsboro	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Poor: small stones.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ad: Adrian	Poor: wetness.	Probable	Improbable: too sandy.	Poor: excess humus, wetness.
Ae: Allis	Poor: area reclaim, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
AnA, AnB, AnC: Angola	Poor: area reclaim, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.
ArC: Arnot	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
AsB*:				
Arnot	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
AsF*:				
Arnot	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
Br: Birdsall	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
BuA, BuB, BuC, BvB: Burdett	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
BxA, BxB: Busti	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, area reclaim.
Ca: Carlisle	Poor: wetness, low strength.	Improbable: excess humus.	Improbable: excess humus.	Poor: excess humus, wetness.
CeA, CeB: Castile	Fair: wetness.	Probable	Probable	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CgB, CgC: Chautauqua	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
ChA, ChB, ChC: Chenango	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
ChD: Chenango	Fair: slope.	Improbable: small stones.	Probable	Poor: small stones, area reclaim, slope.
CkB: Chenango	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
ClA, ClB: Claverack	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
CoA, CoB, CoC: Colonie	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
CoD: Colonie	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
CoE: Colonie	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Cs: Cosad	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Du*. Dumps				
ElA, ElB: Elmridge	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
EnA, EnB: Elnora	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
FaB: Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
FrB*, FrC*:				
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Rock outcrop.				
FrF*:				
Farmington	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
FwC*:				
Farmington	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Wassaic	Poor: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop.				
Fx*:				
Fluvaquents.				
Udifluvents.				
Gr: Granby	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.
Ha: Hamlin	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
HnA, HnB, HnC: Hornell	Poor: depth to rock, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
HoA, HoB, HoC: Howard	Good	Probable	Probable	Poor: small stones, area reclaim.
HuB, HuC: Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, too clayey.
HuD: Hudson	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, too clayey.
HuE: Hudson	Poor: slope, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, too clayey.
In: Ilion	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.
KeB: Kearsarge	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
LaC: Lackawanna	Fair: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
LaD------------------- Lackawanna	Fair: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
LcE------------------- Lackawanna	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
LoA, LoB, LoC--------- Lordstown	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
LoD------------------- Lordstown	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
LrE*:				
Lordstown------------	Poor: slope, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones.
Arnot----------------	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Ma-------------------- Madalin	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
MbB, MbC-------------- Manlius	Poor: area reclaim.	Improbable: small stones, excess fines.	Improbable: thin layer, excess fines.	Poor: small stones, area reclaim.
MbD------------------- Manlius	Poor: area reclaim.	Improbable: small stones, excess fines.	Improbable: thin layer, excess fines.	Poor: small stones, slope, area reclaim.
MbE------------------- Manlius	Poor: slope, area reclaim.	Improbable: small stones, excess fines.	Improbable: thin layer, excess fines.	Poor: small stones, slope, area reclaim.
Mh*:				
Medihemists.				
Hydraquents.				
Mk-------------------- Middlebury	Poor: wetness.	Probable-------------	Probable-------------	Poor: small stones, area reclaim, wetness.
MoB, MoC, MrB--------- Morris	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
NaB, NaC, NrC: Nassau	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
NrD: Nassau	Poor: thin layer, area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, area reclaim, small stones.
NuB, NuC: Nunda	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
NuD: Nunda	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
NuE: Nunda	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
NvC: Nunda	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
NvE: Nunda	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
OqB, OqC: Oquaga	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
OqD: Oquaga	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Pa: Palms	Poor: wetness.	Improbable: excess humus.	Improbable: excess humus.	Poor: wetness, excess humus.
Pm*, Pn*. Pits				
Ra: Raynham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RhA, RhB: Rhinebeck	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
RkA, RkB, RkC: Riverhead	Good	Probable	Probable	Poor: small stones.
ScA, ScB: Scio	Fair: wetness.	Probable	Probable	Fair: area reclaim.
Sh: Shaker	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
St: Stafford	Poor: wetness.	Probable	Improbable: too sandy.	Poor: wetness.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SuA, SuB: Sudbury	Fair: wetness.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, area reclaim.
Te: Teel	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones.
To: Tioga	Good	Probable	Probable	Poor: small stones, area reclaim.
TuB*:				
Tuller	Poor: area reclaim, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, wetness.
Greene	Poor: area reclaim, wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
Ud*, Ue*. Udipsamments				
Uf*:				
Udipsamments.				
Urban land.				
Ug*. Udorthents				
Uh*, Uk*:				
Udorthents.				
Urban land.				
UnA, UnB, UnC: Unadilla	Good	Probable	Probable	Fair: area reclaim.
UnD: Unadilla	Fair: slope.	Probable	Probable	Poor: slope.
Ur*. Urban land				
Us*:				
Urban land.				
Udipsamments.				
Ut*:				
Urban land.				
Udorthents.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
VaB, VaC: Valois	Good	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
VaD: Valois	Fair: slope.	Improbable: small stones.	Probable	Poor: small stones, area reclaim, slope.
Wa: Wakeland	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
WcA, WcB, WcC: Wassaic	Poor: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
WnC*:				
Wassaic	Poor: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Nellis	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Wo: Wayland	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
WrB, WrC: Wellsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
WrD: Wellsboro	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, small stones, area reclaim.
WsC: Wellsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
Ad----------------- Adrian	Severe: seepage.	Severe: ponding, piping, seepage.	Severe: cutbanks cave.	Ponding, flooding, subsides.	Ponding, too sandy, soil blowing.	Wetness.
Ae----------------- Allis	Moderate: depth to rock.	Severe: thin layer, wetness.	Severe: no water.	Percs slowly, depth to rock.	Depth to rock, erodes easily, wetness.	Wetness, erodes easily, droughty.
AnA---------------- Angola	Moderate: depth to rock.	Severe: piping, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock	Wetness, erodes easily.
AnB---------------- Angola	Moderate: depth to rock, slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock	Wetness, erodes easily.
AnC---------------- Angola	Severe: slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock, slope.	Wetness, slope, erodes easily.
ArC---------------- Arnot	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, slope, depth to rock.	Large stones, slope, droughty.
AsB*:						
Arnot--------------	Severe: depth to rock.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty.
Rock outcrop.						
AsF*:						
Arnot--------------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, slope, depth to rock.	Large stones, slope, droughty.
Rock outcrop.						
Br----------------- Birdsall	Slight----------	Severe: piping, ponding.	Severe: slow refill, cutbanks cave.	Percs slowly, frost action.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
BuA---------------- Burdett	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
BuB---------------- Burdett	Moderate: seepage, slope.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Wetness, erodes easily.
BuC---------------- Burdett	Severe: slope.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
BvB---------------- Burdett	Moderate: seepage, slope.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Wetness, erodes easily.
BxA---------------- Busti	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Wetness.
BxB---------------- Busti	Moderate: slope, seepage.	Severe: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Wetness.
Ca----------------- Carlisle	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, flooding, subsides.	Ponding, soil blowing.	Wetness.
CeA---------------- Castile	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Droughty.
CeB---------------- Castile	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Frost action, slope, cutbanks cave.	Wetness, too sandy.	Droughty.
CgB---------------- Chautauqua	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Slope-----------	Wetness---------	Droughty.
CgC---------------- Chautauqua	Severe: slope.	Moderate: piping.	Severe: no water.	Slope-----------	Wetness, slope.	Slope, droughty.
ChA, ChB----------- Chenango	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones---	Large stones, droughty.
ChC, ChD----------- Chenango	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Large stones, slope, droughty.
CkB---------------- Chenango	Severe: seepage.	Severe: seepage.	Moderate: deep to water, slow refill.	Deep to water	Large stones---	Droughty, large stones.
ClA---------------- Claverack	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly---	Wetness, percs slowly.	Droughty, percs slowly.
ClB---------------- Claverack	Severe: seepage.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Wetness, percs slowly.	Droughty, percs slowly.
CoA, CoB----------- Colonie	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Too sandy------	Droughty.
CoC, CoD, CoE------ Colonie	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Cs----------------- Cosad	Severe: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly, cutbanks cave.	Wetness, percs slowly.	Wetness, percs slowly.
Du*. Dumps						

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
ElA: Elmridge	Slight	Moderate: piping, hard to pack, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, percs slowly.
ElB: Elmridge	Moderate: slope.	Moderate: piping, hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, percs slowly.	Erodes easily, percs slowly.
EnA: Elnora	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Droughty.
EnB: Elnora	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, too sandy.	Droughty.
FaB: Farmington	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
FrB*:						
Farmington	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
Rock outcrop.						
FrC*, FrF*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop.						
FwC*:						
Farmington	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
Wassaic	Severe: slope.	Moderate: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop.						
Fx*:						
Fluvaquents.						
Udifluvents.						
Gr: Granby	Severe: seepage.	Severe: seepage, piping, ponding.	Severe: cutbanks cave.	Ponding, cutbanks cave.	Ponding, too sandy, soil blowing.	Wetness, droughty.
Ha: Hamlin	Moderate: seepage.	Severe: piping.	Moderate: deep to water, slow refill.	Deep to water	Erodes easily	Erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
HnA: Hornell	Moderate: depth to rock.	Severe: wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock, erodes easily.	Wetness, erodes easily.
HnB: Hornell	Moderate: depth to rock, slope.	Severe: wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock, erodes easily.	Wetness, erodes easily.
HnC: Hornell	Severe: slope.	Severe: wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Slope, depth to rock, erodes easily.	Wetness, slope, erodes easily.
HoA, HoB: Howard	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Favorable	Droughty.
HoC: Howard	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope	Slope, droughty.
HuB: Hudson	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Erodes easily, wetness.	Percs slowly, erodes easily.
HuC, HuD, HuE: Hudson	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, percs slowly, erodes easily.
In: Ilion	Slight	Severe: ponding, piping.	Severe: slow refill.	Ponding, percs slowly, frost action.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, rooting depth.
KeB: Kearsarge	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock, erodes easily.	Erodes easily, depth to rock.
LaC, LaD: Lackawanna	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, rooting depth, percs slowly.	Slope, rooting depth, percs slowly.
LcE: Lackawanna	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, slope.	Slope, wetness, rooting depth.	Slope, rooting depth, percs slowly.
LoA: Lordstown	Moderate: seepage, depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
LoB: Lordstown	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock	Droughty, depth to rock.
LoC, LoD: Lordstown	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.
LrE*:						
Lordstown	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, droughty, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
LrE*:						
Arnot	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, slope, depth to rock.	Large stones, slope, droughty.
Ma Madalin	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Erodes easily, ponding, percs slowly.	Wetness, erodes easily, percs slowly.
MbB Manlius	Moderate: seepage, depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, depth to rock.	Droughty, large stones, depth to rock.
MbC, MbD, MbE Manlius	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, droughty, large stones.
Mh*:						
Medihemists.						
Hydraquents.						
Mk Middlebury	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Wetness	Wetness.
MoB Morris	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Percs slowly, wetness, rooting depth.	Wetness, rooting depth, percs slowly.
MoC Morris	Severe: slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Percs slowly, wetness, slope.	Wetness, rooting depth, slope.
MrB Morris	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Percs slowly, wetness, large stones.	Percs slowly, wetness, large stones.
NaB Nassau	Severe: depth to rock.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty, depth to rock.
NaC, NrC, NrD Nassau	Severe: depth to rock, slope.	Severe: seepage, thin layer.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Slope, large stones, droughty.
NuB Nunda	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Frost action, slope.	Erodes easily, wetness.	Erodes easily.
NuC, NuD, NuE Nunda	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, slope.	Slope, erodes easily, wetness.	Slope, erodes easily.
NvC, NvE Nunda	Severe: slope.	Severe: piping.	Severe: no water.	Frost action, slope.	Slope, wetness, percs slowly.	Slope.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
OqB----------------- Oquaga	Moderate: seepage, depth to rock, slope.	Severe: seepage, piping, thin layer.	Severe: no water.	Deep to water	Large stones, depth to rock.	Large stones, droughty.
OqC, OqD---------- Oquaga	Severe: slope.	Severe: seepage, piping, thin layer.	Severe: no water.	Deep to water	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Pa----------------- Palms	Severe: seepage.	Severe: excess humus, ponding.	Severe: slow refill.	Ponding, subsides, frost action.	Ponding, soil blowing.	Wetness.
Pm*, Pn*. Pits						
Ra----------------- Raynham	Slight---------	Severe: piping, wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
RhA---------------- Rhinebeck	Slight---------	Severe: wetness.	Severe: no water.	Percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
RhB---------------- Rhinebeck	Moderate: slope.	Severe: wetness.	Severe: no water.	Slope, percs slowly, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
RkA, RkB---------- Riverhead	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy------	Favorable.
RkC---------------- Riverhead	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
ScA---------------- Scio	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, frost action.	Erodes easily, wetness.	Erodes easily.
ScB---------------- Scio	Moderate: seepage, slope.	Severe: piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave, frost action.	Erodes easily, wetness.	Erodes easily.
Sh----------------- Shaker	Slight---------	Severe: wetness.	Severe: slow refill.	Percs slowly, frost action.	Wetness, percs slowly, erodes easily.	Wetness, percs slowly, erodes easily.
St----------------- Stafford	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Wetness, droughty.
SuA---------------- Sudbury	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Cutbanks cave	Too sandy, wetness.	Droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
SuB: Sudbury	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Too sandy, wetness.	Droughty.
Te: Teel	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Erodes easily, wetness.	Erodes easily.
To: Tioga	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Erodes easily	Erodes easily, droughty.
TuB*:						
Tuller	Severe: depth to rock.	Severe: thin layer, wetness.	Severe: no water.	Percs slowly, depth to rock, frost action.	Depth to rock, wetness, large stones.	Wetness, large stones, droughty.
Greene	Moderate: depth to rock.	Severe: wetness, piping.	Severe: no water.	Slope, percs slowly, depth to rock.	Depth to rock, wetness.	Wetness, depth to rock.
Ud*, Ue*. Udipsamments						
Uf*:						
Udipsamments.						
Urban land.						
Ug*. Udorthents						
Uh*, Uk*:						
Udorthents.						
Urban land.						
UnA: Unadilla	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
UnB: Unadilla	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
UnC, UnD: Unadilla	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Ur*. Urban land						
Us*:						
Urban land.						
Udipsamments.						
Ut*:						
Urban land.						
Udorthents.						

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Terraces and diversions	Grassed waterways
VaB----------------- Valois	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable------	Droughty.
VaC, VaD---------- Valois	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope----------	Slope, droughty.
Wa----------------- Wakeland	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Erodes easily, wetness.	Wetness, erodes easily.
WcA---------------- Wassaic	Moderate: seepage, depth to rock.	Moderate: piping.	Severe: no water.	Depth to rock	Depth to rock	Depth to rock.
WcB---------------- Wassaic	Moderate: seepage, depth to rock, slope.	Moderate: piping.	Severe: no water.	Depth to rock, slope.	Depth to rock	Depth to rock.
WcC---------------- Wassaic	Severe: slope.	Moderate: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
WnC*:						
Wassaic----------	Severe: slope.	Moderate: piping.	Severe: no water.	Depth to rock, slope.	Slope, depth to rock.	Slope, depth to rock.
Nellis-----------	Severe: slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope----------	Slope, rooting depth, droughty.
Wo----------------- Wayland	Slight---------	Severe: piping, ponding.	Severe: slow refill.	Percs slowly, flooding, frost action.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
WrB---------------- Wellsboro	Moderate: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, rooting depth, percs slowly.	Rooting depth, percs slowly.
WrC, WrD---------- Wellsboro	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Wetness, rooting depth, slope.	Rooting depth, percs slowly, slope.
WsC---------------- Wellsboro	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, large stones, wetness.	Large stones, rooting depth, slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
Ad---------------- Adrian	0-26	Muck---------------	PT	A-8	0-1	---	---	---	---	---	---
	26-60	Fine sand, loamy fine sand, fine sandy loam.	SP	A-3	0	100	95-100	75-90	1-4	---	NP
Ae---------------- Allis	0-9	Silt loam----------	ML, CL	A-6, A-7	0	80-100	75-100	70-100	55-90	35-45	10-20
	9-34	Silty clay loam, silty clay, very channery clay loam.	ML, CL, GC, GM	A-6, A-7	5-10	55-95	50-95	45-95	40-95	35-45	10-20
	34	Weathered bedrock	---	---	---	---	---	---	---	---	---
AnA, AnB, AnC----- Angola	0-10	Silt loam----------	ML, CL	A-4, A-6, A-7	0	100	75-100	65-100	55-95	25-45	3-20
	10-25	Silty clay loam, clay loam, channery silt loam.	GM, GC, ML, CL	A-4, A-6	0-5	60-100	55-95	45-95	35-90	15-35	3-20
	25	Weathered bedrock	---	---	---	---	---	---	---	---	---
ArC--------------- Arnot	0-8	Very channery silt loam.	GM	A-2, A-4, A-1, A-5	10-25	30-60	25-55	20-55	15-50	35-45	1-9
	8-18	Very channery silt loam, very channery loam.	GM	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	20-35	1-9
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
AsB*, AsF*:											
Arnot------------	0-8	Very channery silt loam.	GM	A-2, A-4, A-1, A-5	10-25	30-60	25-55	20-55	15-50	35-45	1-9
	8-18	Very channery silt loam, very channery loam.	GM	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	20-35	1-9
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Br---------------- Birdsall	0-8	Mucky silt loam	ML, OL, CL-ML	A-4	0	100	100	90-100	70-90	<30	NP-7
	8-15	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<30	NP-7
	15-64	Silt loam, very fine sandy loam, silty clay loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<30	NP-7

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
BuA, BuB, BuC----- Burdett	0-8	Silt loam--------	ML	A-4, A-7	0	85-95	80-90	70-90	55-80	35-45	5-15
	8-13	Silt loam, very fine sandy loam, gravelly silt loam.	ML, SM, CL, SC	A-4	0-5	75-95	70-90	60-85	40-80	20-30	2-10
	13-43	Gravelly clay loam, silty clay loam, gravelly loam.	CL, GM-GC, SC, CL-ML	A-4, A-6	5-10	65-85	60-80	50-75	40-65	20-30	5-15
	43-68	Gravelly loam, clay loam, channery silt loam.	CL, SC, GC, CL-ML	A-4, A-6	5-10	65-85	60-80	50-75	40-65	20-35	5-15
BvB--------------- Burdett	0-8	Silt loam--------	ML, SM, GM	A-4, A-7	5-10	65-75	60-70	55-65	40-60	35-45	5-15
	8-13	Silt loam, very fine sandy loam, shaly silt loam.	ML, SM, CL, SC	A-4	0-5	75-95	70-90	60-85	40-80	20-30	2-10
	13-43	Channery clay loam, silty clay loam, channery loam.	CL, GM-GC, SC, CL-ML	A-4, A-6	5-10	65-85	60-80	50-75	40-65	20-30	5-15
	43-68	Channery loam, clay loam, shaly silt loam.	CL, SC, GC, CL-ML	A-4, A-6	5-10	65-85	60-80	50-75	40-65	20-35	5-15
BxA, BxB--------- Busti	0-9	Silt loam--------	ML, SM, SM-SC	A-4, A-6	0-5	80-95	75-90	65-85	45-75	20-40	1-12
	9-32	Silt loam, loam, gravelly silt loam.	ML, GM, SM	A-4	0-5	55-95	50-90	45-85	35-75	15-25	NP-5
	32-60	Gravelly silt loam, gravelly loam.	ML, GM, SM	A-4	0-5	55-80	50-70	40-70	35-65	15-25	NP-5
Ca--------------- Carlisle	0-99	Muck-------------	PT	A-8	0	---	---	---	---	---	---
CeA, CeB--------- Castile	0-5	Gravelly loam----	ML, GM, SM, CL-ML	A-2, A-4	0-5	55-85	50-75	40-75	30-65	<30	NP-10
	5-28	Very gravelly loam, very gravelly sandy loam, gravelly silt loam.	GM, SM, ML, GM-GC	A-1, A-2, A-4	5-10	40-75	35-70	15-65	5-60	<30	NP-10
	28-60	Very gravelly sand, very gravelly loam, very gravelly loamy sand.	GW, GP, GW-GM, SW-SM	A-1, A-2, A-4	5-10	30-85	25-70	10-45	0-40	---	NP
CgB, CgC--------- Chautauqua	0-8	Gravelly silt loam.	ML, GM, SM, CL-ML	A-4, A-6	0-5	55-80	50-75	45-70	35-65	20-40	1-12
	8-21	Channery silt loam, gravelly loam, silt loam.	ML, GM, SM, CL-ML	A-4	0-5	55-80	50-75	45-70	35-65	15-25	NP-5
	21-64	Gravelly silt loam, very gravelly loam.	GM, CL-ML, SM, GM-GC	A-2-4, A-4	0-5	50-75	45-70	40-65	30-60	15-25	NP-5

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
ChA, ChB, ChC, ChD-------------- Chenango	0-11	Gravelly silt loam.	ML, GM, SM	A-2, A-4, A-1	5-15	55-85	55-80	35-80	15-70	<35	NP-10
	11-57	Gravelly silt loam, gravelly loam, very channery fine sandy loam.	ML, GM, SM, GP-GM	A-2, A-4, A-1	5-20	25-75	20-70	15-70	10-65	<40	NP-10
	57-74	Very channery silt loam, very channery loam, very gravelly sandy loam.	GM, GP-GM	A-1, A-2, A-4, A-3	10-20	15-60	10-55	5-55	5-50	<35	NP-10
CkB-------------- Chenango	0-11	Channery silt loam.	ML, GM, SM	A-2, A-4, A-1	5-15	55-85	55-80	35-80	15-70	<35	NP-10
	11-57	Channery silt loam, gravelly loam, very channery fine sandy loam.	ML, GM, SM, GP-GM	A-2, A-4, A-1	5-20	25-75	20-70	15-70	10-65	<40	NP-10
	57-74	Very channery silt loam, very channery loam, very gravelly sandy loam.	GM, GP-GM	A-1, A-2, A-4, A-3	10-20	15-60	10-55	5-55	5-50	<35	NP-10
ClA, ClB--------- Claverack	0-9	Loamy fine sand	SM, SW, SW-SM, SP	A-2, A-4, A-1, A-3	0	100	95-100	45-85	4-40	---	NP
	9-26	Loamy fine sand, fine sand, sand.	SM, SW, SW-SM, SP	A-2, A-4, A-1, A-3	0	100	95-100	45-85	4-40	---	NP
	26-60	Silty clay, clay, silty clay loam.	CL, CL-ML	A-7, A-4, A-6	0	100	95-100	90-100	75-95	20-50	5-30
CoA, CoB, CoC, CoD, CoE--------- Colonie	0-7	Loamy fine sand	SM	A-2, A-4	0	100	95-100	65-95	20-40	---	NP
	7-68	Loamy fine sand, fine sand.	SM	A-2, A-4	0	100	95-100	65-95	20-40	---	NP
	68-80	Fine sand, loamy fine sand.	SM	A-2, A-4	0	100	95-100	65-95	20-40	---	NP
Cs--------------- Cosad	0-9	Loamy fine sand	SM, SW, SW-SM, SP-SM	A-2, A-4, A-1, A-3	0	100	90-100	45-85	14-40	---	NP
	9-18	Loamy fine sand, fine sand, sand.	SM, SW, SW-SM, SP-SM	A-2, A-4, A-1, A-3	0	100	90-100	45-85	4-40	---	NP
	18-26	Loamy fine sand, fine sand, sand.	SM, SW, SW-SM, SP-SM	A-2, A-4, A-1, A-3	0	100	90-100	45-85	4-40	---	NP
	26-60	Silty clay, clay, silty clay loam.	CL, CL-ML	A-7, A-4, A-6	0	100	90-100	90-100	75-95	20-50	5-30
Du*. Dumps											

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Frag- ments >3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
ElA, ElB--------- Elmridge	0-9	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	9-20	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	20-60	Silty clay loam, silty clay, clay.	CL, CL-ML	A-6, A-7	0	100	100	90-100	75-95	25-50	5-25
EnA, EnB--------- Elnora	0-11	Loamy fine sand	SM, ML	A-2, A-4	0	100	100	70-95	25-60	---	NP
	11-27	Loamy fine sand, fine sand.	SM	A-2, A-4	0	100	100	70-95	25-45	---	NP
	27-65	Fine sand, loamy fine sand.	SM	A-2, A-4	0	100	100	60-85	20-45	---	NP
FaB-------------- Farmington	0-9	Silt loam--------	ML, CL, SM, SC	A-2, A-4, A-6	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	9-19	Silt loam, loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
FrB*, FrC*, FrF*: Farmington------	0-9	Silt loam--------	ML, CL, SM, SC	A-2, A-4, A-6	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	9-19	Silt loam, loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
FwC*: Farmington------	0-9	Silt loam--------	ML, CL, SM, SC	A-2, A-4, A-6	0-5	80-95	75-90	50-85	30-80	20-35	3-15
	9-19	Silt loam, loam, gravelly fine sandy loam.	ML, CL, GM, GC	A-2, A-4, A-6, A-1	0-5	60-95	55-90	35-85	20-80	20-35	3-15
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Wassaic---------	0-9	Silt loam--------	ML, SM	A-4	0	80-100	75-100	60-95	40-90	25-35	2-10
	9-30	Loam, gravelly fine sandy loam, silty clay loam.	GM, GC, SM, CL	A-2, A-4	0-5	60-100	55-95	45-95	25-85	15-25	2-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Fx*: Fluvaquents.											
Udifluvents.											
Gr--------------- Granby	0-11	Loamy fine sand	SM	A-2	0	100	100	50-75	15-30	---	NP
	11-25	Sand, fine sand, loamy sand.	SP, SP-SM, SM	A-3, A-2	0	100	95-100	50-75	0-20	---	NP
	25-60	Sand, fine sand	SP, SP-SM	A-3, A-2	0	100	95-100	50-70	0-5	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
Ha---------------- Hamlin	0-11	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	60-90	15-35	2-15
	11-19	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	60-90	15-35	2-15
	19-39	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	95-100	90-100	90-100	60-90	15-25	2-15
	39-66	Silt loam, very fine sandy loam, fine sandy loam.	ML, SM, CL, SM-SC	A-4	0	95-100	95-100	75-100	45-90	<25	NP-10
HnA, HnB, HnC---- Hornell	0-7	Silt loam--------	ML, CL	A-6, A-7	0	95-100	90-100	80-100	65-90	35-49	10-22
	7-17	Silty clay, channery silty clay loam, clay.	ML, CL, CH, GC	A-6, A-7	0-5	60-95	50-90	45-90	35-85	35-55	10-30
	17-28	Channery silty clay, very channery silty clay loam, channery clay.	ML, CL, CH, GC	A-6, A-7, A-2	0-5	30-80	25-75	20-75	20-70	35-55	10-30
	28	Weathered bedrock	---	---	---	---	---	---	---	---	---
HoA, HoB, HoC---- Howard	0-8	Gravelly silt loam.	SM, GM, ML, GM-GC	A-4, A-2, A-1	0-5	55-80	50-75	30-70	15-65	25-35	5-10
	8-29	Gravelly loam, very gravelly sandy loam, gravelly silt loam.	SC, GC, GM-GC, CL-ML	A-4, A-2, A-1	0-5	45-80	40-75	25-70	10-60	15-25	5-10
	29-67	Very gravelly loam, very gravelly sandy clay loam, very gravelly sandy loam.	GC, GW-GC, GM-GC, GP-GC	A-2, A-4	5-10	40-55	35-50	20-45	10-40	25-30	5-10
	67-75	Stratified sand and gravel.	GW, GP, GW-GM, GP-GM	A-1	5-15	35-45	30-40	15-30	0-5	<20	NP-5
HuB, HuC, HuD, HuE-------------- Hudson	0-11	Silt loam--------	ML, CL-ML, OL, CL	A-4, A-6, A-7	0	95-100	95-100	85-100	65-95	25-48	5-19
	11-16	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	16-31	Silty clay, silty clay loam.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	80-100	35-65	15-35
	31-60	Silty clay, silt loam, clay.	CL, CH	A-7, A-6	0	95-100	90-100	80-100	60-100	35-65	15-35
In---------------- Ilion	0-12	Silt loam--------	ML, OL, SM	A-7, A-5	0	80-100	75-100	65-100	45-95	40-50	5-15
	12-32	Silty clay loam, clay loam, channery clay loam.	CL, CL-ML, GM-GC, SC	A-4, A-6	0-5	55-90	50-85	45-85	35-80	20-30	5-15
	32-60	Channery silt loam, loam, channery silty clay loam.	CL, CL-ML, GM-GC, SC	A-4, A-6, A-2	5-10	55-90	50-85	40-80	30-80	20-30	5-15

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag-ments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas-ticity index
	In				Pct					Pct	
KeB-------------- Kearsarge	0-8	Silt loam--------	ML, SM	A-4	0-5	90-100	85-95	65-85	45-80	<33	NP-5
	8-18	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
LaC, LaD--------- Lackawanna	0-8	Channery silt loam.	GM, ML, CL, SM	A-2, A-4	0-15	40-80	40-75	35-70	20-60	---	---
	8-25	Loam, silt loam, channery silt loam.	GM, ML, CL, SM	A-2, A-4, A-6, A-1	0-20	40-80	40-75	35-70	20-60	20-35	1-14
	25-60	Silt loam, channery silt loam, channery sandy loam.	GM, SM, ML, CL	A-2, A-4, A-6, A-1	0-20	50-85	40-80	35-75	20-55	15-35	1-12
LcE-------------- Lackawanna	0-8	Silt loam--------	ML, CL, GM, SM	A-4, A-2	3-20	40-100	40-95	35-90	20-85	---	---
	8-25	Channery loam, silt loam, flaggy loam.	GM, ML, CL, SM	A-2, A-4, A-6	0-20	40-80	40-75	35-70	20-60	20-35	1-14
	25-60	Channery loam, channery silt loam, flaggy loam.	GM, SM, ML, CL	A-2, A-4, A-6	0-20	50-85	40-80	35-75	20-55	15-35	1-12
LoA, LoB, LoC, LoD------------- Lordstown	0-6	Channery silt loam.	ML, GM, SM	A-4	5-20	65-85	50-75	45-70	40-65	<30	NP-4
	6-30	Channery silt loam, channery loam.	ML, GM, SM	A-4	5-10	65-85	50-75	45-70	40-65	<30	NP-4
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
LrE*: Lordstown-------	0-6	Channery silt loam.	ML, GM, SM	A-4	5-20	65-85	50-75	45-70	40-65	<30	NP-4
	6-30	Channery silt loam, channery loam.	ML, GM, SM	A-4	5-10	65-85	50-75	45-70	40-65	<30	NP-4
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Arnot-----------	0-8	Very channery silt loam.	GM	A-2, A-4, A-1, A-5	10-25	30-60	25-55	20-55	15-50	35-45	1-9
	8-18	Very channery silt loam, very channery loam.	GM	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	20-35	1-9
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ma--------------- Madalin	0-9	Silt loam--------	ML, MH, OL, OH	A-6, A-7	0	95-100	95-100	85-100	65-100	35-65	10-25
	9-30	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	95-100	95-100	85-100	70-100	38-65	20-35
	30-60	Silty clay, clay, silty clay loam.	CL, CH	A-6, A-7	0	75-100	70-100	65-100	60-100	35-60	15-35

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments >3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
MbB, MbC, MbD, MbE: Manlius	0-8	Channery silt loam.	ML, GM, SM, CL-ML	A-4, A-2	5-25	55-80	50-75	35-75	25-70	25-35	4-10
	8-20	Very channery silt loam, very channery loam.	GM, GM-GC, GW-GM	A-2, A-4, A-1	10-25	25-60	20-55	15-55	10-50	25-35	4-10
	20-24	Very channery silt loam, very channery loam.	GM, GM-GC, GW-GM	A-1, A-2, A-4	10-25	20-60	15-55	10-55	5-50	25-35	4-10
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Mh*: Medihemists.											
Hydraquents.											
Mk: Middlebury	0-9	Silt loam	ML, SM, SM-SC, CL-ML	A-4, A-2	0	80-100	75-100	50-100	30-90	25-35	5-10
	9-42	Silt loam, loam, gravelly fine sandy loam.	ML, SM, SM-SC, CL-ML	A-4, A-2	0	75-100	70-100	50-100	30-85	20-25	2-5
	42-70	Stratified gravelly sandy loam to sand.	GW, GM, SW, SM	A-1, A-2, A-3	0-5	40-100	35-100	20-100	0-35	---	NP
MoB, MoC: Morris	0-16	Channery silt loam.	GM, ML, CL, SM	A-4, A-2	0-15	60-95	50-75	40-75	30-65	20-30	1-10
	16-60	Channery silt loam, channery loam, channery silty clay loam.	GM, SM, CL, SM	A-2, A-4	0-20	60-95	45-80	40-80	25-75	15-25	NP-9
MrB: Morris	0-16	Channery silt loam.	GM, ML, CL, SM	A-4, A-2	3-20	60-95	55-85	40-80	30-70	20-30	1-10
	16-60	Channery loam, channery silt loam, channery silty clay loam.	GM, ML, CL, SM	A-2, A-4	0-20	60-95	45-80	40-80	25-75	15-25	NP-9
NaB, NaC: Nassau	0-8	Channery silt loam.	ML, GM, SM	A-2, A-4	5-20	55-85	45-80	30-75	25-70	25-37	1-10
	8-16	Very channery silt loam, very channery loam.	GM, GM-GC	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	20-35	1-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
NrC, NrD: Nassau	0-8	Very channery silt loam.	GM	A-2, A-4, A-1	5-20	30-60	25-55	20-55	15-50	25-35	1-10
	8-16	Very channery silt loam, very channery loam.	GM, GM-GC	A-2, A-4, A-1	10-25	30-60	25-55	20-55	15-50	20-35	1-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
NuB, NuC, NuD, NuE------------- Nunda	0-10	Silt loam--------	ML, SM	A-4, A-7	0	80-100	75-100	55-100	30-85	35-45	5-15
	10-20	Channery silt loam, gravelly loam, very fine sandy loam.	ML, GC, CL, GM-GC	A-4, A-2	0-5	65-95	60-90	50-90	30-70	20-30	2-10
	20-44	Gravelly silty clay loam, clay loam, silty clay loam.	GM-GC, GC, CL-ML, CL	A-4, A-6, A-2	5-10	65-95	60-90	55-90	45-85	20-30	5-15
	44-64	Gravelly loam, gravelly silty clay loam, silty clay loam.	GM-GC, GC, CL-ML, CL	A-4, A-6, A-2	5-10	65-95	60-90	55-90	45-85	20-30	5-15
NvC, NvE--------- Nunda	0-10	Silt loam--------	ML, SM	A-4, A-7 A-4, A-2 A-4, A-7	5-10	80-100	25-100	55-100	30-85	35-45	5-15
	10-20	Channery silt loam, gravelly loam, very fine sandy loam.	ML, GC, CL, GM-GC	A-4, A-2	0-5	75-95	60-90	50-90	30-70	20-30	2-10
	20-44	Gravelly silty clay loam, clay loam, silty clay loam.	GM-GC, GC, CL-ML, CL	A-4, A-6, A-2	5-10	65-95	60-90	55-90	45-85	20-30	5-15
	44-64	Gravelly loam, gravelly silty clay loam, silty clay loam.	GM-GC, GC, CL-ML, CL	A-4, A-6, A-2	5-10	65-95	60-90	55-90	45-85	20-30	5-15
OqB, OqC, OqD---- Oquaga	0-8	Channery silt loam.	ML, GM, SM	A-4, A-2, A-5	5-20	50-85	40-70	35-70	25-65	35-45	2-7
	8-30	Very channery loam, very channery silt loam.	GM, ML, SM, GM-GC	A-1, A-2, A-4	10-25	35-70	25-60	20-60	15-55	20-30	2-7
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Pa--------------- Palms	0-42	Muck-------------	PT	---	---	---	---	---	---	---	---
	42-98	Clay loam, silty clay loam, fine sandy loam.	CL-ML, CL	A-4, A-6	0	85-100	80-100	70-95	50-90	25-40	5-20
Pm*, Pn*. Pits											
Ra--------------- Raynham	0-11	Very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	55-95	<25	NP-5
	11-24	Silt loam, silt, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	55-95	<25	NP-5
	24-60	Silt loam, silt, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	70-95	<25	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
RhA, RhB--------- Rhinebeck	0-7	Silty clay loam	ML, MH, CL, CH	A-6, A-7	0	80-100	75-100	70-100	60-90	30-55	10-25
	7-34	Silty clay loam, silty clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-100	30-55	15-30
	34-64	Silty clay loam, silty clay, clay.	CH, CL	A-7, A-6	0	90-100	85-100	80-100	70-100	30-55	15-30
RkA, RkB, RkC---- Riverhead	0-11	Fine sandy loam	SM, ML	A-2, A-4	0-5	95-100	90-100	55-95	30-75	14-18	1-3
	11-25	Sandy loam, fine sandy loam, gravelly sandy loam.	SM, GM	A-2, A-4, A-1	0-5	65-100	60-95	40-80	20-45	14-18	1-3
	25-31	Loamy sand, gravelly loamy sand, fine sandy loam.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-4	0-5	60-90	55-85	30-70	10-45	---	NP
	31-65	Stratified sand and gravel.	SP, SW, SP-SM, GP	A-1	0-10	40-95	35-90	25-50	0-10	---	NP
ScA, ScB--------- Scio	0-8	Silt loam--------	ML	A-4	0	100	95-100	90-100	70-90	<20	NP-4
	8-65	Silt loam, very fine sandy loam.	ML	A-4	0	100	95-100	90-100	70-90	<20	NP-4
Sh--------------- Shaker	0-11	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	11-31	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	95-100	60-95	30-60	---	NP
	31-62	Silty clay, silty clay loam, clay.	CL, CL-ML	A-6, A-7	0	100	95-100	90-100	75-95	25-50	5-25
St--------------- Stafford	0-12	Loamy fine sand	SM	A-2, A-4	0	95-100	90-100	60-85	20-45	---	NP
	12-30	Loamy fine sand, fine sand.	SM	A-2, A-4	0	95-100	90-100	60-85	20-45	---	NP
	30-60	Fine sand, sand	SM, SW-SM, SP-SM	A-2, A-1, A-3	0	90-100	90-100	45-80	5-35	---	NP
SuA, SuB--------- Sudbury	0-11	Fine sandy loam	SM, ML	A-2, A-4, A-1	0-5	85-100	70-100	40-90	20-55	---	NP
	11-20	Sandy loam, fine sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1	0-5	85-100	60-100	40-80	20-50	---	NP
	20-29	Gravelly coarse sand, loamy sand, sandy loam.	SM, SP-SM	A-1, A-2, A-3	0-5	70-100	60-100	30-70	5-35	---	NP
	29-48	Stratified sand and gravel.	SM, SP-SM, GM, GP-GM	A-1, A-2, A-3	0-5	55-95	50-90	25-65	5-25	---	NP
	48-60	Silt loam--------	ML	A-4	0	100	95-100	90-100	70-90	<20	NP-4

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Te---------------- Teel	0-8	Silt loam--------	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	70-90	15-35	2-15
	8-29	Silt loam, very fine sandy loam.	ML, CL-ML, CL	A-4, A-6	0	100	95-100	90-100	65-90	15-35	2-15
	29-60	Silt loam, fine sandy loam, gravelly very fine sandy loam.	ML, SM, CL, SM-SC	A-4, A-6, A-2	0-5	75-100	70-100	50-100	30-90	<35	NP-15
To---------------- Tioga	0-11	Silt loam--------	ML, SM	A-4	0	100	95-100	65-95	40-85	<15	NP-4
	11-34	Silt loam, loam, gravelly fine sandy loam.	SM, GM, ML	A-1, A-2, A-4	0	55-100	50-100	35-90	20-80	<15	NP-2
	34-65	Silt loam, gravelly loam, very gravelly loamy sand.	GW-GM, GM, SM, ML	A-1, A-2, A-4, A-3	0-10	35-100	30-100	15-90	5-80	<15	NP-2
TuB*: Tuller-----------	0-8	Channery silt loam.	ML, GM, SM, MH	A-2, A-7	5-10	55-75	50-70	40-70	30-60	40-55	10-20
	8-16	Channery silt loam, channery loam, fine sandy loam.	GM, GM-GC, SM	A-2, A-4, A-1	10-20	55-70	50-65	30-60	20-50	20-30	2-7
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Greene-----------	0-9	Channery silt loam.	ML, SM, MH	A-7	0-15	80-100	70-85	60-85	45-80	40-55	10-20
	9-22	Channery silt loam, channery loam, channery silty clay loam.	ML, SM, MH	A-7	0-15	80-100	70-85	60-85	45-80	40-55	10-20
	22-34	Channery loam, channery silt loam, gravelly silty clay loam.	ML, SM, CL-ML	A-4	0-15	80-100	70-85	60-85	45-80	20-30	1-7
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Ud*, Ue*. Udipsamments											
Uf*: Udipsamments.											
Urban land.											
Ug*. Udorthents											
Uh*, Uk*: Udorthents.											
Urban land.											

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Fragments >3 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
UnA, UnB, UnC---- Unadilla	0-9	Silt loam--------	ML	A-4	0	100	95-100	90-100	70-90	<35	NP-10
	9-64	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<25	NP-10
UnD-------------- Unadilla	0-9	Silt loam--------	ML	A-4	0	100	95-100	90-100	70-90	<35	NP-10
	9-60	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<25	NP-10
Ur*. Urban land											
Us*: Urban land.											
Udipsamments.											
Ut*: Urban land.											
Udorthents.											
VaB, VaC, VaD---- Valois	0-8	Gravelly loam----	ML, GM, SM, GM-GC	A-4, A-2, A-1	0-5	55-80	50-75	35-75	20-70	20-40	1-12
	8-30	Gravelly loam, gravelly silt loam, gravelly sandy loam.	GM, ML, SM, GM-GC	A-4, A-2, A-1	0-10	55-95	50-90	35-90	20-80	15-25	NP-5
	30-46	Gravelly silt loam, gravelly loam, gravelly sandy loam.	GM, GM-GC, SM, ML	A-4, A-2, A-1	0-10	55-75	50-70	30-70	15-65	15-25	NP-5
	46-60	Very gravelly fine sandy loam, very gravelly sandy loam, very gravelly loam.	GM, GW-GM, GW, GM-GC	A-1, A-2, A-4	0-15	20-60	15-55	10-50	4-40	15-25	NP-7
Wa--------------- Wakeland	0-9	Silt loam--------	ML	A-4	0	100	100	90-100	80-90	27-36	4-10
	9-62	Silt loam--------	ML	A-4	0	100	100	90-100	80-90	27-36	4-10
WcA, WcB, WcC---- Wassaic	0-9	Silt loam--------	ML, SM	A-4	0	80-100	75-100	60-95	40-90	25-35	2-10
	9-30	Loam, gravelly fine sandy loam, silty clay loam.	GM, GC, SM, CL	A-2, A-4	0-5	60-100	55-95	45-95	25-85	15-25	2-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
WnC*: Wassaic---------	0-9	Silt loam--------	ML, SM	A-4	0	80-100	75-100	60-95	40-90	25-35	2-10
	9-30	Loam, gravelly fine sandy loam, silty clay loam.	GM, GC, SM, CL	A-2, A-4	0-5	60-100	55-95	45-95	25-85	15-25	2-10
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments >3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
WnC*:											
Nellis	0-11	Silt loam	ML, SM	A-4	0-5	80-100	75-95	50-95	35-85	30-35	1-5
	11-21	Loam, silt loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	21-36	Loam, silt loam, gravelly fine sandy loam.	ML, GM, SM, CL-ML	A-2, A-4, A-1	0-5	55-95	50-90	35-90	20-80	20-25	1-5
	36-72	Sandy loam, gravelly loam, very gravelly fine sandy loam.	GM, SM, GM-GC, SM-SC	A-2, A-4, A-1	0-5	40-95	35-90	20-85	10-70	<25	NP-5
Wo Wayland	0-5	Silt loam	ML, OL	A-7, A-5	0	100	95-100	90-100	70-95	40-50	5-15
	5-36	Silt loam, silty clay loam.	ML, CL-ML, CL	A-6, A-4, A-7	0	100	95-100	90-100	70-95	25-45	5-15
	36-60	Stratified silt loam to gravelly fine sandy loam.	CL, CL-ML, SC, GC	A-2, A-4	0	65-100	55-100	50-95	25-90	15-25	5-10
WrB, WrC, WrD Wellsboro	0-7	Silt loam	ML, CL	A-4	0-10	90-100	85-100	80-95	60-90	---	---
	7-18	Loam, channery silt loam, gravelly loam.	ML, SM, CL-ML, GM-GC	A-2, A-4	0-15	70-100	60-100	55-95	30-70	15-30	NP-10
	18-60	Loam, channery sandy loam, gravelly silt loam.	SM, GM, ML, CL	A-2, A-4	0-20	55-90	45-90	35-80	25-60	15-30	NP-10
WsC Wellsboro	0-7	Silt loam	ML, CL, SM	A-4, A-2	3-10	70-100	65-100	60-95	30-90	---	---
	7-18	Loam, channery silt loam, gravelly loam.	ML, SM, CL-ML, GM-GC	A-2, A-4	0-15	70-100	60-100	55-95	30-70	15-30	NP-10
	18-60	Loam, channery silt loam, channery loam.	GM, ML, CL, SM	A-2, A-4	0-20	55-90	45-90	35-80	25-60	15-30	NP-10

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Ad---------------	0-26	---	0.30-0.55	0.2-6.0	0.35-0.45	6.1-7.8	--------------	----	4	55-75
Adrian	26-60	1-4	1.40-1.75	6.0-20	0.05-0.07	6.1-8.4	Low----------	0.15		
Ae---------------	0-9	20-40	1.10-1.40	0.2-2.0	0.16-0.21	5.6-7.3	Low----------	0.43	3	3-8
Allis	9-34	35-60	1.20-1.50	<0.2	0.08-0.14	5.6-7.3	Moderate-----	0.32		
	34	---	---	---	---	---	--------------	----		
AnA, AnB, AnC----	0-10	8-30	1.10-1.40	0.6-2.0	0.17-0.22	5.6-7.8	Low----------	0.37	3	3-6
Angola	10-25	18-35	1.60-1.85	0.06-0.2	0.11-0.19	5.6-7.8	Low----------	0.28		
	25	---	---	---	---	---	--------------	----		
ArC--------------	0-8	8-18	1.10-1.40	0.6-2.0	0.08-0.12	4.5-5.5	Low----------	0.17	2	3-6
Arnot	8-18	8-18	1.20-1.50	0.6-2.0	0.08-0.12	4.5-5.5	Low----------	0.17		
	18	---	---	---	---	---	--------------	----		
AsB*, AsF*:										
Arnot-----------	0-8	8-18	1.10-1.40	0.6-2.0	0.08-0.12	4.5-5.5	Low----------	0.17	2	3-6
	8-18	8-18	1.20-1.50	0.6-2.0	0.08-0.12	4.5-5.5	Low----------	0.17		
	18	---	---	---	---	---	--------------	----		
Rock outcrop.										
Br---------------	0-8	3-16	1.00-1.10	0.2-2.0	0.17-0.30	4.5-6.0	Low----------	0.49	5	2-8
Birdsall	8-15	3-16	1.20-1.50	0.2-0.6	0.15-0.26	5.1-7.3	Low----------	0.64		
	15-64	3-16	1.20-1.50	0.06-0.2	0.15-0.26	5.1-7.3	Low----------	0.64		
BuA, BuB, BuC----	0-8	15-28	1.20-1.50	0.6-2.0	0.15-0.20	5.1-7.3	Low----------	0.37	3	3-6
Burdett	8-13	15-28	1.20-1.50	0.6-2.0	0.13-0.18	5.1-7.3	Low----------	0.37		
	13-43	28-35	1.60-1.85	0.06-0.2	0.08-0.14	5.1-7.3	Low----------	0.28		
	43-68	28-35	1.60-1.85	0.06-0.2	0.08-0.14	6.1-8.4	Low----------	0.28		
BvB--------------	0-8	15-28	1.20-1.50	0.6-2.0	0.13-0.16	5.1-7.3	Low----------	0.28	3	3-6
Burdett	8-13	15-28	1.20-1.50	0.6-2.0	0.13-0.18	5.1-7.3	Low----------	0.37		
	13-43	28-35	1.60-1.85	0.06-0.2	0.08-0.14	5.1-7.3	Low----------	0.28		
	43-68	28-35	1.60-1.85	0.06-0.2	0.08-0.14	6.1-8.4	Low----------	0.28		
BxA, BxB---------	0-9	6-18	1.10-1.40	0.2-2.0	0.13-0.20	5.6-6.5	Low----------	0.32	3	2-6
Busti	9-32	6-18	1.20-1.50	0.2-2.0	0.08-0.15	5.6-6.5	Low----------	0.24		
	32-60	6-18	1.40-1.70	0.06-0.6	0.08-0.14	5.6-6.5	Low----------	0.24		
Ca---------------	0-99	---	0.13-0.23	0.2-6.0	0.35-0.45	4.5-7.8	--------------	----	---	>70
Carlisle										
CeA, CeB---------	0-5	6-18	1.10-1.40	0.6-6.0	0.09-0.16	4.5-6.0	Low----------	0.24	3	4-10
Castile	5-28	4-15	1.25-1.55	2.0-6.0	0.05-0.13	4.5-6.0	Low----------	0.17		
	28-60	2-10	1.45-1.65	>6.0	0.01-0.02	5.1-7.3	Low----------	0.17		
CgB, CgC---------	0-8	6-18	1.10-1.40	0.6-2.0	0.08-0.15	5.1-6.5	Low----------	0.24	3	2-6
Chautauqua	8-21	6-18	1.20-1.50	0.6-2.0	0.08-0.15	5.1-6.5	Low----------	0.24		
	21-64	6-18	1.40-1.70	0.2-0.6	0.08-0.14	5.6-7.3	Low----------	0.24		
ChA, ChB, ChC,										
ChD-------------	0-11	6-18	1.20-1.50	0.6-6.0	0.08-0.15	5.1-6.5	Low----------	0.24	3	2-6
Chenango	11-57	6-18	1.25-1.55	0.6-6.0	0.05-0.14	4.5-6.0	Low----------	0.17		
	57-74	4-18	1.45-1.65	2.0-6.0	0.04-0.11	5.1-7.8	Low----------	0.17		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
CkB: Chenango	0-11	6-18	1.20-1.50	0.6-6.0	0.08-0.16	5.1-6.5	Low	0.24	3	2-6
	11-57	6-18	1.25-1.55	0.6-6.0	0.07-0.15	4.5-6.0	Low	0.17		
	57-74	4-18	1.45-1.65	6.0-20	0.04-0.11	5.1-7.8	Low	0.17		
ClA, ClB: Claverack	0-9	1-3	1.20-1.50	6.0-20	0.08-0.09	5.1-7.3	Low	0.17	3	2-6
	9-26	1-3	1.20-1.50	6.0-20	0.05-0.07	5.6-6.5	Low	0.17		
	26-60	30-50	1.15-1.40	<0.2	0.12-0.17	6.6-8.4	Moderate	0.28		
CoA, CoB, CoC, CoD, CoE: Colonie	0-7	1-2	1.20-1.50	2.0-20	0.09-0.10	5.1-6.5	Low	0.17	4	1-2
	7-68	1-2	1.20-1.50	2.0-20	0.06-0.08	5.1-6.5	Low	0.17		
	68-80	1-2	1.45-1.65	2.0-20	0.04-0.07	5.6-7.3	Low	0.17		
Cs: Cosad	0-9	1-3	1.20-1.50	6.0-20	0.08-0.09	5.1-6.5	Low	0.17	3	3-7
	9-18	1-3	1.20-1.50	6.0-20	0.05-0.07	5.1-6.5	Low	0.17		
	18-26	1-3	1.20-1.50	6.0-20	0.05-0.07	5.6-7.3	Low	0.17		
	26-60	30-50	1.15-1.40	<0.2	0.12-0.17	6.6-8.4	Moderate	0.28		
Du*. Dumps										
ElA, ElB: Elmridge	0-9	2-8	1.00-1.30	2.0-6.0	0.14-0.24	4.5-6.5	Low	0.24	3	2-6
	9-20	2-8	1.35-1.60	2.0-6.0	0.13-0.22	4.5-6.5	Low	0.24		
	20-60	35-60	1.55-1.80	<0.2	0.12-0.18	4.5-7.8	Low	0.49		
EnA, EnB: Elnora	0-11	2-10	1.20-1.50	2.0-6.0	0.08-0.16	4.5-6.5	Low	0.17	4	2-6
	11-27	2-5	1.20-1.50	6.0-20	0.06-0.08	4.5-6.5	Low	0.17		
	27-65	2-5	1.45-1.65	6.0-20	0.03-0.06	5.1-7.3	Low	0.17		
FaB: Farmington	0-9	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-7.3	Low	0.32	2	2-6
	9-19	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	19	---	---	---	---	---	-------------	----		
FrB*, FrC*, FrF*: Farmington	0-9	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-6.5	Low	0.32	2	2-6
	9-19	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	19	---	---	---	---	---	-------------	----		
Rock outcrop.										
FwC*: Farmington	0-9	10-27	1.10-1.40	0.6-2.0	0.11-0.19	5.1-6.5	Low	0.32	2	2-6
	9-19	10-27	1.20-1.50	0.6-2.0	0.07-0.18	5.6-7.8	Low	0.32		
	19	---	---	---	---	---	-------------	----		
Wassaic	0-9	10-27	1.10-1.40	0.6-2.0	0.13-0.21	5.6-7.3	Low	0.32	3	2-6
	9-30	18-35	1.20-1.50	0.2-2.0	0.09-0.19	5.6-7.3	Low	0.32		
	30	---	---	---	---	---	-------------	----		
Rock outcrop.										
Fx*: Fluvaquents.										
Udifluvents.										
Gr: Granby	0-11	2-14	1.20-1.60	6.0-20	0.10-0.12	5.6-7.3	Low	0.17	5	4-6
	11-25	0-14	1.45-1.65	6.0-20	0.05-0.12	5.6-7.3	Low	0.17		
	25-60	0-10	1.45-1.65	6.0-20	0.05-0.09	6.6-8.4	Low	0.17		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Ha----------------- Hamlin	0-11	8-18	1.15-1.40	0.6-2.0	0.18-0.21	5.1-7.3	Low-----------	0.49	5	2-6
	11-19	5-18	1.15-1.45	0.6-2.0	0.17-0.19	5.1-7.3	Low-----------	0.49		
	19-39	5-18	1.15-1.45	0.6-2.0	0.17-0.19	5.6-7.8	Low-----------	0.49		
	39-66	3-10	1.25-1.55	0.6-2.0	0.17-0.19	5.6-7.8	Low-----------	0.49		
HnA, HnB, HnC----- Hornell	0-7	18-40	1.10-1.40	0.6-2.0	0.16-0.21	3.6-6.5	Low-----------	0.43	3	3-7
	7-17	35-60	1.20-1.50	<0.2	0.11-0.13	4.5-6.0	Moderate-----	0.28		
	17-28	35-60	1.70-1.95	<0.2	0.07-0.13	4.5-5.5	Moderate-----	0.28		
	28	---	---	---	---	---	--------------	----		
HoA, HoB, HoC----- Howard	0-8	5-18	1.10-1.40	0.6-6.0	0.07-0.15	5.1-7.3	Low-----------	0.24	3	2-6
	8-29	5-18	1.25-1.55	0.6-6.0	0.08-0.12	5.1-7.3	Low-----------	0.17		
	29-67	10-25	1.25-1.55	0.6-6.0	0.05-0.11	5.1-7.3	Low-----------	0.17		
	67-75	5-15	1.45-1.65	>20	0.01-0.02	6.6-8.4	Low-----------	0.17		
HuB, HuC, HuD, HuE-------------- Hudson	0-11	20-40	1.00-1.25	0.2-2.0	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-6
	11-16	35-60	1.15-1.40	<0.2	0.13-0.17	5.1-7.3	Moderate-----	0.28		
	16-31	25-60	1.15-1.40	<0.2	0.13-0.17	5.6-7.8	Moderate-----	0.28		
	31-60	35-60	1.15-1.40	<0.2	0.12-0.20	6.6-8.4	Moderate-----	0.28		
In----------------- Ilion	0-12	10-35	1.10-1.40	0.2-2.0	0.17-0.21	5.6-7.3	Low-----------	0.37	3	3-8
	12-32	28-35	1.60-1.85	<0.2	0.11-0.17	5.6-7.8	Moderate-----	0.37		
	32-60	10-35	1.70-1.90	<0.2	0.08-0.14	7.4-8.4	Low-----------	0.28		
KeB--------------- Kearsarge	0-8	8-18	1.00-1.20	0.6-2.0	0.15-0.21	4.5-6.0	Low-----------	0.37	2	2-7
	8-18	4-18	1.20-1.50	0.6-2.0	0.10-0.20	4.5-6.0	Low-----------	0.37		
	18	---	---	---	---	---	--------------	----		
LaC, LaD---------- Lackawanna	0-8	10-27	1.20-1.40	0.6-2.0	0.10-0.14	4.5-5.5	Low-----------	0.28	3	1-3
	8-25	5-18	1.40-1.60	0.6-2.0	0.10-0.14	4.5-5.5	Low-----------	0.20		
	25-60	5-18	1.60-1.80	0.06-0.2	0.06-0.12	4.5-6.0	Low-----------	0.20		
LcE--------------- Lackawanna	0-8	10-27	1.20-1.40	0.6-2.0	0.10-0.16	4.5-5.5	Low-----------	0.24	3	---
	8-25	5-18	1.40-1.60	0.6-2.0	0.10-0.16	4.5-5.5	Low-----------	0.20		
	25-60	5-18	1.60-1.80	0.06-0.2	0.06-0.12	4.5-6.0	Low-----------	0.20		
LoA, LoB, LoC, LoD-------------- Lordstown	0-6	8-18	1.10-1.40	0.6-2.0	0.11-0.17	4.5-6.5	Low-----------	0.20	3	2-6
	6-30	8-18	1.20-1.50	0.6-2.0	0.10-0.16	4.5-6.0	Low-----------	0.28		
	30	---	---	---	---	---	--------------	----		
LrE*:										
Lordstown--------	0-6	8-18	1.10-1.40	0.6-2.0	0.11-0.17	4.5-6.5	Low-----------	0.20	3	2-6
	6-30	8-18	1.20-1.50	0.6-2.0	0.10-0.16	4.5-6.0	Low-----------	0.28		
	30	---	---	---	---	---	--------------	----		
Arnot------------	0-8	8-18	1.10-1.40	0.6-2.0	0.08-0.12	4.5-5.5	Low-----------	0.17	2	3-6
	8-18	8-18	1.20-1.50	0.6-2.0	0.08-0.12	4.5-5.5	Low-----------	0.17		
	18	---	---	---	---	---	--------------	----		
Ma----------------- Madalin	0-9	25-55	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.8	Moderate-----	0.37	5	4-10
	9-30	27-60	1.20-1.40	0.06-0.2	0.12-0.13	5.6-7.8	Moderate-----	0.28		
	30-60	40-60	1.15-1.40	<0.2	0.12-0.13	7.4-8.4	Moderate-----	0.28		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
MbB, MbC, MbD, MbE-------------	0-8	6-18	1.10-1.40	0.6-2.0	0.10-0.18	3.6-6.0	Low-----------	0.28	3	1-5
Manlius	8-20	6-18	1.20-1.50	0.6-2.0	0.08-0.12	4.5-6.0	Low-----------	0.20		
	20-24	6-18	1.70-1.95	0.6-2.0	0.03-0.09	4.5-6.5	Low-----------	0.20		
	24	---	---	---	---	---	-------------	----		
Mh*: Medihemists.										
Hydraquents.										
Mk---------------	0-9	5-18	1.15-1.40	0.6-2.0	0.14-0.21	5.1-7.3	Low-----------	0.28	5	3-7
Middlebury	9-42	5-18	1.15-1.45	0.6-2.0	0.10-0.20	5.6-7.3	Low-----------	0.28		
	42-70	1-10	1.25-1.55	2.0-20.0	0.01-0.10	5.6-7.3	Low-----------	0.20		
MoB, MoC---------	0-16	15-25	1.20-1.40	0.6-2.0	0.10-0.14	4.5-6.0	Low-----------	0.28	4	1-3
Morris	16-60	15-32	1.30-1.70	<0.2	0.06-0.08	4.5-6.5	Low-----------	0.24		
MrB--------------	0-16	15-25	1.20-1.40	0.6-2.0	0.12-0.16	4.5-6.0	Low-----------	0.24	4	---
Morris	16-60	15-32	1.30-1.70	<0.2	0.06-0.08	4.5-6.5	Low-----------	0.24		
NaB, NaC---------	0-8	1-10	1.10-1.40	0.6-2.0	0.08-0.16	4.5-5.5	Low-----------	0.20	2	3-5
Nassau	8-16	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low-----------	0.20		
	16	---	---	---	---	---	-------------	----		
NrC, NrD---------	0-8	1-10	1.10-1.40	0.6-2.0	0.07-0.12	4.5-5.5	Low-----------	0.20	2	3-5
Nassau	8-16	1-10	1.20-1.50	0.6-2.0	0.07-0.12	4.5-5.5	Low-----------	0.20		
	16	---	---	---	---	---	-------------	----		
NuB, NuC, NuD, NuE-------------	0-10	10-25	1.10-1.40	0.6-2.0	0.15-0.20	5.1-7.3	Low-----------	0.37	3	3-7
Nunda	10-20	10-25	1.20-1.50	0.6-2.0	0.13-0.18	5.1-7.3	Low-----------	0.32		
	20-44	28-35	1.45-1.65	0.2-0.6	0.08-0.14	5.6-7.3	Low-----------	0.28		
	44-64	20-35	1.55-1.85	<0.2	0.08-0.14	6.1-8.4	Low-----------	0.28		
NvC, NvE---------	0-10	10-25	1.10-1.40	0.6-2.0	0.13-0.16	5.1-7.3	Low-----------	0.28	3	---
Nunda	10-20	10-25	1.20-1.50	0.6-2.0	0.13-0.18	5.1-7.3	Low-----------	0.32		
	20-44	28-35	1.45-1.65	0.2-0.6	0.08-0.14	5.6-7.3	Low-----------	0.28		
	44-64	28-35	1.55-1.85	<0.2	0.08-0.14	6.1-8.4	Low-----------	0.28		
OqB, OqC, OqD----	0-8	7-27	1.10-1.40	0.6-2.0	0.08-0.17	3.6-6.0	Low-----------	0.28	3	2-6
Oquaga	8-30	7-27	1.20-1.50	0.6-2.0	0.04-0.12	3.6-6.0	Low-----------	0.20		
	30	---	---	---	---	---	-------------	----		
Pa---------------	0-42	---	0.25-0.45	0.2-6.0	0.35-0.45	5.1-7.8	-------------	----	2	>75
Palms	42-98	7-35	1.45-1.75	0.2-2.0	0.14-0.22	6.1-8.4	Low-----------	0.37		
Pm*, Pn*. Pits										
Ra---------------	0-11	3-16	1.20-1.50	0.2-2.0	0.18-0.24	5.1-7.3	Low-----------	0.49	5	3-10
Raynham	11-24	3-16	1.20-1.50	0.2-2.0	0.18-0.22	5.1-7.3	Low-----------	0.64		
	24-60	3-16	1.20-1.60	0.06-0.2	0.17-0.21	5.6-7.8	Low-----------	0.64		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
RhA, RhB--------- Rhinebeck	0-7	15-40	1.00-1.25	0.2-0.6	0.16-0.21	5.1-7.3	Moderate-----	0.49	3	3-7
	7-34	35-60	1.20-1.40	0.06-0.2	0.12-0.14	5.1-7.8	Moderate-----	0.28		
	34-64	35-60	1.15-1.40	0.06-0.2	0.12-0.14	6.1-8.4	Low-----------	0.28		
RkA, RkB, RkC---- Riverhead	0-11	3-10	1.10-1.40	2.0-6.0	0.14-0.20	5.1-6.0	Low-----------	0.28	3	2-4
	11-25	1-8	1.25-1.55	2.0-6.0	0.09-0.13	3.6-6.0	Low-----------	0.28		
	25-31	1-8	1.25-1.55	2.0-6.0	0.04-0.13	4.5-6.0	Low-----------	0.17		
	31-65	1-8	1.45-1.65	>20	0.02-0.04	4.5-7.3	Low-----------	0.17		
ScA, ScB--------- Scio	0-8	2-15	1.20-1.50	0.6-2.0	0.18-0.21	4.5-6.0	Low-----------	0.49	3	2-8
	8-65	2-15	1.20-1.50	0.6-2.0	0.17-0.20	4.5-6.0	Low-----------	0.64		
Sh--------------- Shaker	0-11	2-8	1.00-1.25	2.0-6.0	0.14-0.24	5.1-6.0	Low-----------	0.24	3	2-10
	11-31	2-8	1.35-1.60	2.0-6.0	0.13-0.22	5.1-7.3	Low-----------	0.24		
	31-62	35-60	1.55-1.80	<0.2	0.12-0.18	5.6-7.8	Low-----------	0.49		
St--------------- Stafford	0-12	1-10	1.20-1.50	2.0-20.0	0.08-0.10	4.5-6.0	Low-----------	0.17	4	2-6
	12-30	1-10	1.20-1.50	2.0-20.0	0.04-0.08	3.6-6.5	Low-----------	0.17		
	30-60	1-10	1.45-1.65	2.0-20.0	0.02-0.04	5.1-6.5	Low-----------	0.17		
SuA, SuB--------- Sudbury	0-11	2-6	1.10-1.40	2.0-6.0	0.10-0.25	5.1-6.5	Low-----------	0.24	3	2-6
	11-20	2-7	1.15-1.45	2.0-6.0	0.07-0.18	4.5-6.0	Low-----------	0.24		
	20-29	0-4	1.25-1.45	2.0-20	0.01-0.15	4.5-6.0	Low-----------	0.17		
	29-48	0-3	1.30-1.45	6.0-20	0.01-0.06	5.6-7.3	Low-----------	0.10		
	48-60	2-7	1.20-1.50	0.6-2.0	0.17-0.20	5.6-7.3	Low-----------	0.64		
Te--------------- Teel	0-8	8-18	1.15-1.40	0.6-2.0	0.18-0.21	5.1-7.3	Low-----------	0.49	5	2-6
	8-29	5-18	1.15-1.45	0.6-2.0	0.17-0.19	5.1-7.3	Low-----------	0.49		
	29-60	3-10	1.25-1.55	0.6-2.0	0.12-0.12	5.6-7.8	Low-----------	0.49		
To--------------- Tioga	0-11	5-18	1.15-1.40	0.6-6.0	0.15-0.21	5.1-7.3	Low-----------	0.37	5	2-6
	11-34	5-18	1.15-1.45	0.6-6.0	0.07-0.20	5.1-7.3	Low-----------	0.28		
	34-65	3-15	1.25-1.55	0.6-20	0.02-0.20	5.6-7.8	Low-----------	0.28		
TuB*:										
Tuller-----------	0-8	10-27	1.10-1.40	0.6-2.0	0.09-0.15	3.6-6.0	Low-----------	0.24	2	4-9
	8-16	10-27	1.20-1.50	0.06-0.6	0.06-0.10	4.5-5.5	Low-----------	0.17		
	16	---	---	---	---	---	-------------	----		
Greene-----------	0-9	18-35	1.00-1.30	0.6-2.0	0.12-0.17	4.5-5.5	Low-----------	0.17	2	3-9
	9-22	18-35	1.30-1.60	0.06-0.2	0.12-0.17	4.5-6.0	Low-----------	0.17		
	22-34	18-35	1.30-1.60	0.06-0.2	0.12-0.17	5.1-6.0	Low-----------	0.17		
	34	---	---	---	---	---	-------------	----		
Ud*, Ue*. Udipsamments										
Uf*: Udipsamments.										
Urban land.										
Ug*. Udorthents										
Uh*, Uk*: Udorthents										

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	g/cc	In/hr	In/in	pH				Pct
Uh*, Uk*:										
Urban land.										
UnA, UnB, UnC----	0-9	2-18	1.20-1.50	0.6-2.0	0.18-0.21	4.5-6.0	Low----------	0.49	3	2-7
Unadilla	9-64	1-18	1.20-1.50	0.6-2.0	0.17-0.20	4.5-6.0	Low----------	0.64		
UnD--------------	0-9	2-18	1.20-1.50	0.6-2.0	0.18-0.21	4.5-6.0	Low----------	0.49	3	2-7
Unadilla	9-60	1-18	1.20-1.50	0.6-2.0	0.17-0.20	4.5-6.0	Low----------	0.64		
Ur*.										
Urban land										
Us*:										
Urban land.										
Udipsamments.										
Ut*:										
Urban land.										
Udorthents.										
VaB, VaC, VaD----	0-8	6-18	1.10-1.40	0.6-2.0	0.08-0.16	4.5-6.0	Low----------	0.24	3	2-6
Valois	8-30	6-18	1.20-1.50	0.6-2.0	0.07-0.14	4.5-6.0	Low----------	0.24		
	30-46	6-18	1.20-1.50	0.6-6.0	0.07-0.14	4.5-6.0	Low----------	0.24		
	46-60	4-10	1.40-1.60	0.6-6.0	0.03-0.09	4.5-7.3	Low----------	0.24		
Wa---------------	0-9	10-17	1.30-1.50	0.6-2.0	0.22-0.24	5.6-7.3	Low----------	0.37	5	1-3
Wakeland	9-62	10-17	1.30-1.50	0.6-2.0	0.20-0.22	5.6-7.3	Low----------	0.37		
WcA, WcB, WcC----	0-9	10-27	1.10-1.40	0.6-2.0	0.13-0.21	5.6-7.3	Low----------	0.32	3	2-6
Wassaic	9-30	18-35	1.20-1.50	0.2-2.0	0.09-0.19	5.6-7.8	Low----------	0.32		
	30	---	---	---	---	---	-------------	----		
WnC*:										
Wassaic---------	0-9	10-27	1.10-1.40	0.6-2.0	0.13-0.21	5.6-7.3	Low----------	0.32	3	2-6
	9-30	18-35	1.20-1.50	0.2-2.0	0.09-0.19	5.6-7.8	Low----------	0.32		
	30	---	---	---	---	---	-------------	----		
Nellis----------	0-11	5-18	1.30-1.60	0.6-2.0	0.13-0.20	5.6-7.3	Low----------	0.32	3	2-6
	11-21	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.3	Low----------	0.24		
	21-36	5-18	1.40-1.70	0.6-2.0	0.08-0.19	5.6-7.8	Low----------	0.24		
	36-72	3-18	1.70-1.95	0.2-2.0	0.07-0.19	7.4-8.4	Low----------	0.24		
Wo---------------	0-5	15-35	1.05-1.40	0.2-2.0	0.17-0.22	5.1-7.8	Low----------	0.43	5	4-8
Wayland	5-36	18-35	1.10-1.60	0.06-0.2	0.16-0.20	5.1-8.4	Low----------	0.43		
	36-60	15-25	1.25-1.55	0.06-0.2	0.08-0.19	5.6-8.4	Low----------	0.43		
WrB, WrC, WrD----	0-7	15-25	1.20-1.40	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.32	3	1-3
Wellsboro	7-18	15-27	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.28		
	18-60	15-27	1.30-1.60	0.06-0.2	0.06-0.10	4.5-6.0	Low----------	0.28		
WsC--------------	0-7	15-25	1.20-1.40	0.6-2.0	0.10-0.16	4.5-6.0	Low----------	0.24	3	---
Wellsboro	7-18	15-27	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.0	Low----------	0.28		
	18-60	15-27	1.30-1.60	0.06-0.2	0.06-0.10	4.5-6.0	Low----------	0.28		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
Ad------------------ Adrian	A/D	None---------	---	---	+3-0.5	Apparent	Oct-Jun	>60	---	High-----	High-----	Moderate.
Ae------------------ Allis	D	None---------	---	---	0-1.0	Perched	Nov-Jun	20-40	Soft	Moderate	High-----	High.
AnA, AnB, AnC------ Angola	C	None---------	---	---	0.5-1.5	Perched	Dec-May	20-40	Soft	High-----	High-----	Low.
ArC----------------- Arnot	C/D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
AsB*, AsF*:												
Arnot-------------	C/D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
Rock outcrop.												
Br------------------ Birdsall	D	None---------	---	---	+1-1.0	Apparent	Oct-Jul	>60	---	High-----	High-----	High.
BuA, BuB, BuC, BvB--------------- Burdett	C	None---------	---	---	0.5-1.5	Perched	Dec-May	>60	---	High-----	High-----	Low.
BxA, BxB----------- Busti	C	None---------	---	---	0.5-1.5	Perched	Nov-Apr	>60	---	High-----	High-----	Low.
Ca------------------ Carlisle	A/D	None---------	---	---	+.5-1.0	Apparent	Sep-Jun	>60	---	High-----	High-----	Low.
CeA, CeB----------- Castile	B	None---------	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High-----	Moderate	Moderate.
CgB, CgC----------- Chautauqua	C	None---------	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	Moderate	Moderate	Moderate.
ChA---------------- Chenango	A	Rare---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.
ChB, ChC, ChD------ Chenango	A	None---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
CkB: Chenango	A	Rare	---	---	3.0-6.0	Apparent	Apr-May	>60	---	Moderate	Low	Moderate.
ClA, ClB: Claverack	C	None	---	---	1.5-2.0	Perched	Nov-May	>60	---	Moderate	Low	Moderate.
CoA, CoB, CoC, CoD, CoE: Colonie	A	None	---	---	>6.0	---	---	>60	---	Low	Low	Moderate.
Cs: Cosad	C	None	---	---	0.5-1.5	Perched	Nov-May	>60	---	Moderate	High	Moderate.
Du*. Dumps												
ElA, ElB: Elmridge	C	None	---	---	1.5-3.0	Perched	Nov-May	>60	---	High	Moderate	Moderate.
EnA, EnB: Elnora	B	None	---	---	1.5-2.0	Apparent	Feb-May	>60	---	Moderate	Low	Moderate.
FaB: Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
FrB*, FrC*, FrF*: Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
Rock outcrop.												
FwC*: Farmington	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	Moderate.
Wassaic	B	None	---	---	2.0-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Moderate	Low.
Rock outcrop.												
Fx*: Fluvaquents.												
Udifluvents.												
Gr: Granby	A/D	None	---	---	+1-1.0	Apparent	Nov-Jun	>60	---	Moderate	High	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
Ha---------------- Hamlin	B	Occasional	Brief-----	Nov-May	3.0-6.0	Apparent	Nov-May	>60	---	High-----	Low------	Low.
HnA, HnB, HnC----- Hornell	D	None--------	---	---	0.5-1.5	Perched	Dec-May	20-40	Soft	High-----	High-----	High.
HoA, HoB, HoC----- Howard	A	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Low.
HuB, HuC, HuD, HuE-------------- Hudson	C	None--------	---	---	1.5-2.0	Perched	Nov-Apr	>60	---	High-----	High-----	Low.
In---------------- Ilion	D	None--------	---	---	+1-1.0	Apparent	Nov-May	>60	---	High-----	High-----	Low.
KeB--------------- Kearsarge	B	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
LaC, LaD, LcE----- Lackawanna	C	None--------	---	---	2.5-6.0	Perched	Nov-Mar	>60	---	Moderate	Low------	Moderate.
LoA, LoB, LoC, LoD-------------- Lordstown	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	High.
LrE*:												
Lordstown--------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	High.
Arnot------------	C/D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	Low------	High.
Ma---------------- Madalin	D	None--------	---	---	0-0.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
MbB, MbC, MbD, MbE-------------- Manlius	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Low------	Moderate.
Mh*:												
Medihemists.												
Hydraquents.												
Mk---------------- Middlebury	B	Occasional	Brief-----	Nov-May	0.5-2.0	Apparent	Feb-Apr	>60	---	High-----	Moderate	Low.
MoB, MoC, MrB----- Morris	C	None--------	---	---	0.5-1.5	Perched	Nov-Mar	>60	---	High-----	High-----	Moderate.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Bedrock: Depth	Bedrock: Hardness	Potential frost action	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft			In				
NaB, NaC, NrC, NrD Nassau	C	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Low	High.
NuB, NuC, NuD, NuE, NvC, NvE Nunda	C	None	---	---	1.5-2.0	Perched	Mar-May	>60	---	High	Moderate	Low.
OqB, OqC, OqD Oquaga	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Low	Moderate.
Pa Palms	A/D	None	---	---	+1-1.0	Apparent	Nov-May	>60	---	High	High	Moderate.
Pm*, Pn*. Pits												
Ra Raynham	C	None	---	---	0.5-2.0	Apparent	Nov-May	>60	---	High	High	Moderate.
RhA, RhB Rhinebeck	D	None	---	---	0.5-1.5	Perched	Jan-May	>60	---	High	High	Low.
RkA, RkB, RkC Riverhead	B	None	---	---	>6.0	---	---	>60	---	Moderate	Low	High.
ScA, ScB Scio	B	None	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High	Moderate	Moderate.
Sh Shaker	C	None	---	---	0-1.5	Apparent	Oct-Jun	>60	---	High	Moderate	Moderate.
St Stafford	C	None	---	---	0.5-1.5	Apparent	Jan-May	>60	---	Moderate	Low	High.
SuA, SuB Sudbury	B	None	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	Moderate	Low	High.
Te Teel	B	Occasional	Brief	Nov-May	1.5-2.0	Apparent	Jan-May	>60	---	High	Moderate	Low.
To Tioga	B	Occasional	Brief	Nov-May	3.0-6.0	Apparent	Feb-Apr	>60	---	Moderate	Low	Moderate.
TuB*: Tuller	D	None	---	---	0.5-1.0	Perched	Dec-Jun	10-20	Hard	High	High	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
TuB*:												
Greene-----------	B	None---------	---	---	0.5-1.0	Perched	Dec-Jun	20-40	Hard	High-----	High-----	High.
Ud*, Ue*. Udipsamments												
Uf*:												
Udipsamments.												
Urban land.												
Ug*. Udorthents												
Uh*, Uk*:												
Udorthents.												
Urban land.												
UnA, UnB, UnC, UnD-------------- Unadilla	B	None---------	---	---	>6.0	---	---	>60	---	High-----	Low------	Moderate.
Ur*. Urban land												
Us*:												
Udipsamments.												
Urban land.												
Ut*:												
Urban land.												
Udorthents.												
VaB, VaC, VaD----- Valois	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	High.
Wa---------------- Wakeland	C	Occasional	Brief to long.	Jan-May	1.0-3.0	Apparent	Jan-Apr	>60	---	High-----	High-----	Low.
WcA, WcB, WcC----- Wassaic	B	None---------	---	---	2.0-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Moderate	Low.
WnC*:												
Wassaic----------	B	None---------	---	---	2.0-3.0	Perched	Mar-Apr	20-40	Hard	Moderate	Moderate	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
WnC*:												
Nellis-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Low.
Wo---------------- Wayland	C/D	Frequent----	Brief to long.	Nov-Jun	0-0.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
WrB, WrC, WrD, WsC-------------- Wellsboro	C	None--------	---	---	1.5-3.0	Perched	Nov-Mar	>60	---	High-----	High-----	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--ENGINEERING INDEX TEST DATA

(Dashes indicate that data were not available. LL means liquid limit; PI, plasticity index; MD, maximum dry density; OM, optimum moisture; and LS, linear shrinkage)

Soil name*, report number, horizon, and depth in inches	Classification		Grain-size distribution											LL	PI	Moisture density		LS
			>3	Percentage passing sieve--							Percentage smaller than--							
	AASHTO	Unified		2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			MD	OM	
			Pct											Pct		Lb/ cu ft	Pct	Pct
Burdett silt loam: (S80NY-001-008)																		
Ap----- 0 to 8	A-6 (08)	ML-CL	0	---	96.4	94.4	90.5	87.7	81.5	70.6	43.0	19.8	12.3	38.3	25.9	101.4	20.9	8.0
E/B---- 8 to 13	A-4 (03)	CL	0	100	97.9	96.4	92.3	87.9	79.0	67.6	40.2	23.2	14.1	26.3	18.5	114.0	14.2	6.0
IIBt1-- 13 to 20	A-6 (11)	CL	0	---	99.0	98.4	97.2	95.6	89.9	83.3	68.7	44.9	28.0	34.4	20.3	107.5	17.8	8.0
IIBt2-- 20 to 43	A-6 (04)	CL	0	94.1	85.5	84.1	80.5	76.0	68.4	61.8	48.0	30.5	19.5	30.9	20.3	114.4	15.3	6.0
IIC---- 43 to 68	A-6 (02)	CL	0	95.2	86.7	84.5	77.8	71.6	60.7	51.6	38.7	26.3	18.0	28.5	16.9	119.6	13.3	8.0
Elmridge fine sandy loam: (S80NY-001-016)																		
Ap----- 0 to 9	A-4 (00)	GM	---	---	---	---	100	99.9	96.5	41.8	15.0	7.2	3.0	19.1	18.3	109.2	15.2	2.0
Bw1---- 9 to 16	A-4 (00)	GM	---	---	---	---	100	99.9	97.5	41.3	11.9	5.9	4.0	---	NP	117.5	11.5	---
Bw2---- 16 to 20	A-2-4(00)	GM	---	---	---	100	99.9	99.6	95.6	30.8	11.3	6.4	3.7	---	NP	117.5	11.2	---
IIBw3-- 20 to 28	A-4 (00)	ML-CL	---	---	---	---	100	99.9	96.2	81.7	62.2	45.9	27.2	28.0	20.1	102.1	21.0	6.0
IIC1--- 28 to 41	A-7-5(24)	MH	---	---	---	---	---	100	99.8	98.8	86.3	71.6	48.7	51.1	31.9	94.2	27.2	10.0
IIC2--- 41 to 60	A-7-5(23)	MH	---	---	---	100	99.6	99.2	98.3	97.3	87.4	76.1	53.9	55.3	34.9	90.2	29.3	10.0
Elnora loamy fine sand: (S80NY-001-015)																		
Ap1---- 0 to 8	A-2-4(00)	---	---	---	---	---	100	99.9	96.3	13.9	---	---	---	---	NP	109.0	13.8	---
Ap2---- 8 to 11	A-2-4(00)	---	---	---	---	---	---	100	96.1	14.9	---	---	---	---	NP	108.9	14.0	---
Bw----- 11 to 27	A-3 (00)	---	---	---	---	---	100	99.9	96.2	10.0	---	---	---	---	NP	108.6	14.0	---
C1----- 27 to 32	A-2-4(00)	---	---	---	---	---	---	100	97.9	32.5	4.0	1.6	0.6	---	NP	107.3	14.6	---
C2----- 32 to 65	A-2-4(00)	---	---	---	---	---	---	100	99.9	34.2	3.2	1.3	0.3	---	NP	101.4	16.6	---
Hamlin silt loam: (S80NY-001-011)																		
Ap----- 0 to 9	A-4 (00)	GM	---	---	---	---	100	99.9	96.5	41.8	15.0	7.2	3.0	25.9	18.8	110.8	15.6	4.0
Bw1---- 9 to 16	A-4 (00)	GM	---	---	---	---	100	99.9	97.5	41.3	11.9	5.9	4.0	27.5	21.1	108.5	17.3	4.0
Bw2---- 16 to 20	A-2-4(00)	GM	---	---	---	100	99.9	99.6	95.6	30.8	11.3	6.4	3.7	32.3	24.2	101.5	21.0	6.0
C1----- 20 to 28	A-4 (00)	ML-CL	---	---	---	---	100	99.9	96.2	81.7	62.2	45.9	27.2	25.2	18.2	108.3	17.2	5.0
C2----- 28 to 41	A-7-5(24)	MH	---	---	---	---	---	100	99.8	98.8	86.3	71.6	48.7	25.7	19.0	107.1	18.3	4.0

See footnote at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name*, report number, horizon, and depth in inches	Classification		Grain-size distribution											LL	PI	Moisture density		LS
			>3	Percentage passing sieve--							Percentage smaller than--					MD	OM	
	AASHTO	Unified		2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm					
			Pct											Pct		Lb/ cu ft	Pct	Pct
Kearsarge silt loam: (S80NY-001-005)																		
Ap----- 0 to 8	A-5 (01)	OL	---	100	90.2	86.2	77.0	71.9	64.6	50.7	24.8	20.4	4.4	41.1	36.4	99.0	20.0	6.0
Bw----- 8 to 15	A-4 (00)	GM-GC	100	96.1	80.0	75.3	68.2	64.8	58.6	46.4	29.2	14.9	7.1	31.1	25.0	105.4	16.8	4.0
Nunda silt loam: (S80NY-001-009)																		
Ap----- 0 to 10	A-4 (03)	ML	100	96.5	82.0	78.5	72.3	69.0	62.4	52.7	33.2	17.0	7.2	37.3	27.7	103.3	19.4	6.0
E------ 10 to 16	A-4 (02)	ML-CL	---	---	95.0	93.3	89.6	86.5	77.7	65.6	43.8	26.9	14.4	24.5	19.3	112.1	15.6	4.0
E/B---- 16 to 24	A-4 (03)	CL	100	94.5	90.9	89.2	85.8	82.6	75.3	64.5	44.7	28.3	16.5	25.2	17.9	114.7	15.3	6.0
IIBt1-- 24 to 44	A-6 (07)	CL	100	96.5	93.9	92.1	89.6	87.8	83.5	75.1	48.7	34.4	23.2	30.7	19.3	113.7	14.3	6.0
IIC---- 44 to 64	A-4 (03)	CL	---	100	95.5	93.6	88.0	82.5	71.7	61.0	44.0	29.2	20.0	25.8	16.3	120.7	12.8	5.0
Rhinebeck silt loam: (S80NY-001-010)																		
Ap1---- 0 to 7	A-4 (06)	OL	---	---	---	---	100	97.5	89.4	83.0	57.6	32.2	16.6	34.4	27.0	98.4	21.5	6.0
Ap2---- 7 to 11	A-4 (08)	OL	---	---	---	100	99.7	98.2	91.3	85.0	60.7	34.0	17.7	35.3	26.7	98.2	21.7	6.0
E/B---- 11 to 17	A-7-6(16)	ML-CL	---	---	---	---	100	99.7	96.8	93.5	73.3	51.1	31.1	40.9	26.6	99.8	21.5	8.0
Bt1---- 17 to 26	A-6 (21)	CL	---	---	---	---	100	99.9	98.9	97.0	76.3	50.9	32.8	40.5	21.1	101.7	21.9	10.0
Bt2---- 26 to 34	A-6 (13)	ML-CL	---	---	---	---	---	100	99.6	97.5	60.7	51.9	30.2	36.7	24.3	103.2	20.8	8.0
IIC---- 34 to 64	A-6 (15)	ML-CL	---	---	100	99.9	99.2	98.7	98.0	96.7	70.4	50.9	31.7	38.0	24.9	101.2	21.8	8.0

See footnote at end of table.

TABLE 18.--ENGINEERING INDEX TEST DATA--Continued

Soil name*, report number, horizon, and depth in inches	Classification		Grain-size distribution											LL	PI	Moisture density		LS
			>3	Percentage passing sieve--							Percentage smaller than--							
	AASHTO	Unified		2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			MD	OM	
			Pct											Pct		Lb/ cu ft	Pct	Pct
Scio silt loam: (S80NY-001-012)																		
A------ 0 to 8	A-4 (05)	OL	0	---	---	---	---	100	99.1	89.5	39.1	10.3	4.7	32.2	27.9	93.2	22.7	4.0
Bw1---- 8 to 18	A-4 (04)	ML-CL	0	---	---	---	---	100	99.4	94.7	56.1	18.4	10.8	25.1	19.4	106.5	16.2	4.0
Bw2---- 18 to 31	A-4 (08)	ML-CL	0	---	---	---	---	100	99.9	99.2	66.6	24.3	16.0	29.9	22.5	106.1	17.8	6.0
BC----- 31 to 34	A-4 (04)	ML-CL	0	---	---	---	---	---	100	99.7	63.2	16.1	9.1	28.3	24.1	103.7	18.7	4.0
IIC1--- 34 to 44	A-4 (05)	ML-CL	0	---	---	---	---	---	100	99.8	69.2	21.5	12.7	27.9	22.2	102.2	20.7	4.0
IIC2--- 44 to 65	A-4 (02)	ML	0	---	---	---	---	---	---	99.8	59.0	13.9	6.6	26.3	23.2	103.7	19.4	2.0

* Locations of the sampled pedons are as follows:

Albany County, town of New Scotland; Winnie farm, in hayfield east of transmission line, 3,100 feet east of Route 32 and LaGrange Lane and 650 feet north of Route 32.

Albany County, town of Colonie; Shaker Ridge Country Club, in field northwest of Albany-Shaker Road and Shaker Ridge Country Club driveway intersection, 100 feet west of Albany-Shaker Road.

Albany County, town of New Scotland; Winnie farm, in hayfield east of transmission line, 3,100 feet east of Route 32 and LaGrange Lane and 650 feet north of Route 32.

Albany County, town of Colonie; Shaker Ridge Country Club, in field northwest of Albany-Shaker Road and Shaker Ridge Country Club driveway intersection, 100 feet west of Albany-Shaker Road.

Albany County, town of Berne; in abandoned field, 700 feet south-southwest of metal gate at west end of Grippy Road and 0.6 mile west of intersection with Woodstock Road.

Albany County, town of New Scotland; Fugliene farm, in hayfield 1,300 feet east-northeast of Clipp Road and Hurst Road intersection, 320 feet north-northwest of Diamond Hill Road and Hurst Road.

Albany County, town of New Scotland; Blessing property, 1,200 feet northeast on New Scotland-South Road from intersection with Conrail tracks, 200 feet west of road, 100 feet south of hedgerow.

Albany County, town of Bethlehem; on private road northwest of Blue Cross-Blue Shield building, about 3/4 mile northwest of State Route 85 (Slingerlands bypass) and New Scotland Avenue intersection, about 60 feet west of private gated road (Renaud property).

TABLE 19.--RELATIONSHIP BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF THE SOILS

Soil characteristics and parent material*	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	SOILS ON UPLAND TILL PLAINS					
Very deep soils formed in moderately fine textured grayish brown glacial till			Nunda	Burdett	Ilion	
Very deep soils formed in medium textured brown glacial till		Valois** Nellis**	Chautauqua	Busti		
Very deep soils formed in medium textured, reddish glacial till with dense subsoil (fragipan)		Lackawanna	Wellsboro	Morris		
Moderately deep soils formed in fine textured grayish glacial till over shale				Hornell	Allis	
Moderately deep soils formed in moderately fine textured grayish brown glacial till over shale and siltstone				Angola		
Moderately deep soils formed in medium textured brownish glacial till over shale	Manlius	Manlius				
Moderately deep soils formed in medium textured reddish glacial till over interbedded shale, siltstone, and sandstone	Oquaga	Oquaga				
Moderately deep soils formed in medium textured brownish glacial till over interbedded sandstone, siltstone, and shale		Lordstown		Greene***		
Moderately deep soils formed in medium textured brownish glacial till over limestone		Wassaic	Wassaic			
Shallow soils formed in medium textured brownish glacial till over shale	Nassau					
Shallow soils formed in medium textured brownish glacial till over sandstone, siltstone, and shale averaging less than 35 percent rock fragments	Kearsarge			Tuller	Tuller	
Shallow soils formed in medium textured brownish glacial till over interbedded sandstone, siltstone, and shale averaging more than 35 percent rock fragments	Arnot	Arnot	Arnot			
Shallow soils formed in medium textured brownish glacial till over limestone	Farmington	Farmington				

See footnotes at end of table.

TABLE 19.--RELATIONSHIP BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF THE SOILS--Continued

Soil characteristics and parent material*	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	SOILS ON OUTWASH TERRACES, DELTAS, AND BEACHES					
Very deep soils formed in medium textured brownish silty deposits		Unadilla	Scio		Raynham	Birdsall
Very deep soils formed in medium textured brownish outwash deposits over very gravelly outwash		Riverhead	Sudbury			
Very deep soils formed in medium textured brownish outwash deposits over very gravelly outwash	Chenango	Chenango	Castile			
Very deep soils formed in moderately coarse textured, nongravelly, brown material	Colonie	Colonie	Elnora	Stafford	Granby	Granby
Very deep soils formed in medium textured brownish material with an accumulation of clay in the subsoil over outwash sand and gravel	Howard	Howard				
Very deep soils formed in coarse textured brownish material over clayey sediments			Claverack	Cosad		
Very deep soils formed in medium textured brownish material over clayey sediments			Elmridge	Shaker	Shaker	
	SOILS ON LACUSTRINE PLAINS					
Very deep soils formed in fine textured brownish deposits			Hudson	Rhinebeck	Madalin	Madalin
	SOILS ON FLOOD PLAINS IN VALLEYS					
Very deep soils formed in medium textured, brownish alluvial sediments over sand and gravel		Tioga		Middlebury		
Very deep soils formed in medium textured brownish alluvial sediments		Hamlin	Teel	Wakeland	Wayland	Wayland
Very deep soils formed in coarse textured to moderately fine textured, brownish alluvial sediments		Udifluvents	Udifluvents	Fluvaquents	Fluvaquents	Fluvaquents

See footnotes at end of table.

TABLE 19.--RELATIONSHIP BETWEEN PARENT MATERIAL, LANDSCAPE POSITION, AND DRAINAGE OF THE SOILS--Continued

Soil characteristics and parent material*	Somewhat excessively drained	Well drained	Moderately well drained	Somewhat poorly drained	Poorly drained	Very poorly drained
	SOILS IN SWAMPS AND BOGS					
Very deep soils formed in well decomposed organic material, more than 51 inches thick						Carlisle
Very deep soils formed in well decomposed organic material 16 to 51 inches thick						Adrian Palms
Very deep soils formed in medium textured grayish mineral material						Medihemists Hydraquents
	SOILS ON TILL PLAINS AND OUTWASH TERRACES DISTURBED BY HUMAN ACTIVITIES					
Very deep, medium textured to fine textured mixed soil material		Udorthents	Udorthents			
Very deep, coarse textured, mixed soil material	Udipsamments	Udipsamments	Udipsamments			

* Texture refers to dominant subsoil texture.
** These soils are mapped in a soils complex with Wassaic soils.
*** These soils are mapped in a soils complex with Tuller soils.

TABLE 20.--CLASSIFICATION OF THE SOILS

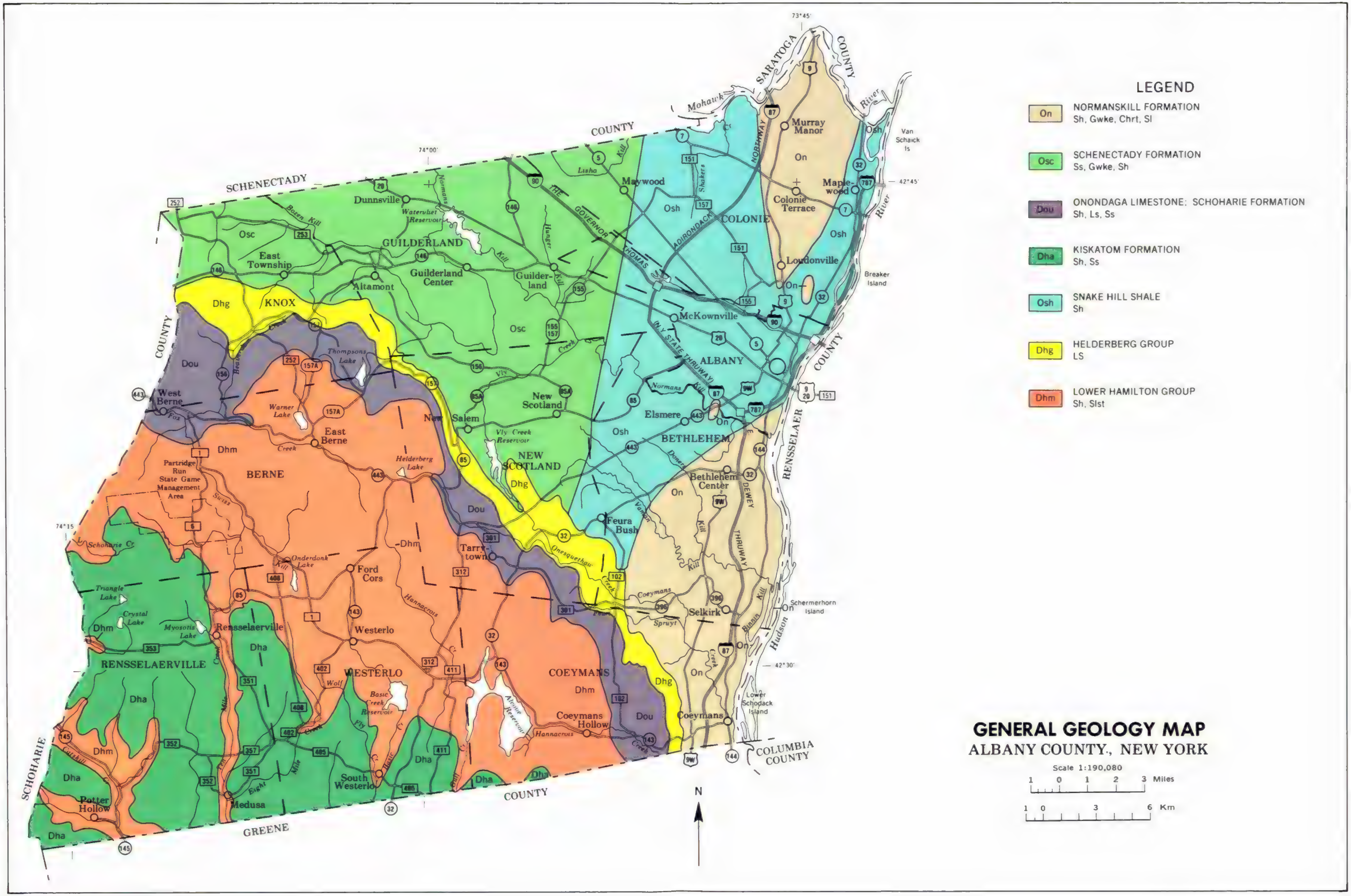
(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Adrian	Sandy or sandy-skeletal, mixed, euic, mesic Terric Medisaprists
*Allis	Fine, illitic, acid, mesic Aeric Haplaquepts
Angola	Fine-loamy, mixed, mesic Aeric Ochraqualfs
Arnot	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Birdsall	Coarse-silty, mixed, nonacid, mesic Typic Humaquepts
Burdett	Fine-loamy, mixed, mesic Aeric Ochraqualfs
Busti	Coarse-loamy, mixed, nonacid, mesic Aeric Haplaquepts
Carlisle	Euic, mesic Typic Medisaprists
Castile	Loamy-skeletal, mixed, mesic Aquic Dystrochrepts
Chautauqua	Coarse-loamy, mixed, mesic Aquic Dystrochrepts
Chenango	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Claverack	Sandy over clayey, mixed, nonacid, mesic Aquic Udorthents
Colonie	Mixed, mesic Alfic Udipsamments
Cosad	Sandy over clayey, mixed, nonacid, mesic Aquic Udorthents
Elmridge	Coarse-loamy over clayey, mixed, mesic Aquic Dystric Eutrochrepts
Elnora	Mixed, mesic Aquic Udipsamments
Farmington	Loamy, mixed, mesic Lithic Eutrochrepts
Fluvaquents	Fluvaquents
Granby	Sandy, mixed, mesic Typic Haplaquolls
Greene	Fine-loamy, mixed, acid, mesic Aeric Haplaquepts
Hamlin	Coarse-silty, mixed, mesic Dystric Fluventic Eutrochrepts
Hornell	Fine, illitic, acid, mesic Aeric Haplaquepts
Howard	Loamy-skeletal, mixed, mesic Glossoboric Hapludalfs
Hudson	Fine, illitic, mesic Glossaquic Hapludalfs
Hydraquents	Hydraquents
Ilion	Fine-loamy, mixed, mesic Mollic Ochraqualfs
Kearsarge	Loamy, mixed, mesic Lithic Dystrochrepts
Lackawanna	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Lordstown	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Madalin	Fine, illitic, mesic Mollic Ochraqualfs
Manlius	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Medihemists	Medihemists
Middlebury	Coarse-loamy, mixed, mesic Fluvaquentic Eutrochrepts
Morris	Coarse-loamy, mixed, mesic Aeric Fragiaquepts
Nassau	Loamy-skeletal, mixed, mesic Lithic Dystrochrepts
Nellis	Coarse-loamy, mixed, mesic Typic Eutrochrepts
Nunda	Fine-loamy, mixed, mesic Glossaquic Hapludalfs
Oquaga	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Palms	Loamy, mixed, euic, mesic Terric Medisaprists
Raynham	Coarse-silty, mixed, nonacid, mesic Aeric Haplaquepts
Rhinebeck	Fine, illitic, mesic Aeric Ochraqualfs
Riverhead	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Scio	Coarse-silty, mixed, mesic Aquic Dystrochrepts
Shaker	Coarse-loamy over clayey, mixed, nonacid, mesic Aeric Haplaquepts
Stafford	Mixed, mesic Typic Psammaquents
Sudbury	Sandy, mixed, mesic Aquic Dystrochrepts
Teel	Coarse-silty, mixed, mesic Fluvaquentic Eutrochrepts
Tioga	Coarse-loamy, mixed, mesic Dystric Fluventic Eutrochrepts
Tuller	Loamy, mixed, acid, mesic Lithic Haplaquepts
Udifluvents	Udifluvents
Udipsamments	Udipsamments
Udorthents	Udorthents
Unadilla	Coarse-silty, mixed, mesic Typic Dystrochrepts
Valois	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Wakeland	Coarse-silty, mixed, nonacid, mesic Aeric Fluvaquents
Wassaic	Fine-loamy, mixed, mesic Glossoboric Hapludalfs
Wayland	Fine-silty, mixed, nonacid, mesic Mollic Fluvaquents
Wellsboro	Coarse-loamy, mixed, mesic Typic Fragiochrepts

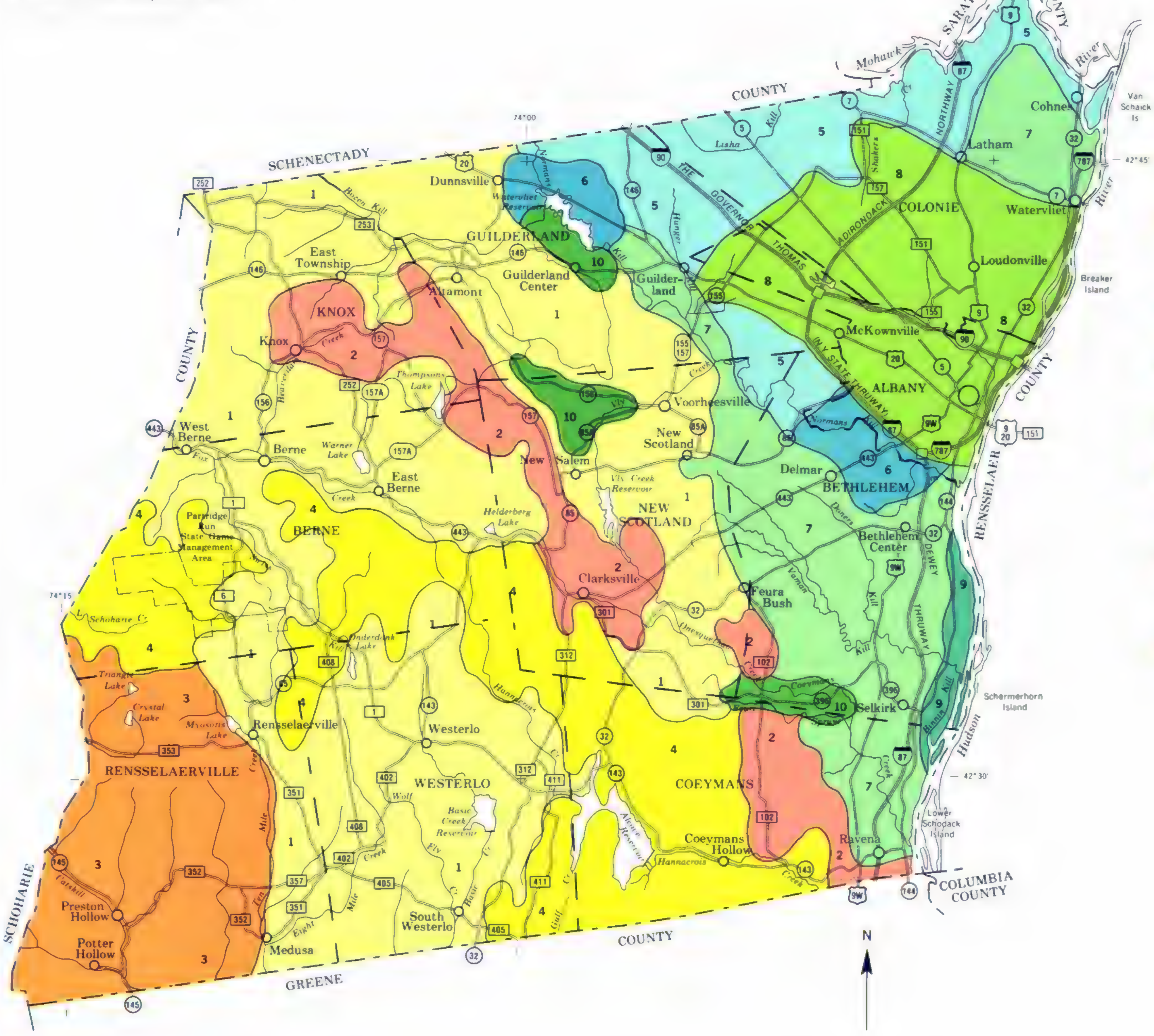
NRCS Accessibility Statement

This document is not accessible by screen-reader software. The Natural Resources Conservation Service (NRCS) is committed to making its information accessible to all of its customers and employees. If you are experiencing accessibility issues and need assistance, please contact our Helpdesk by phone at 1-800-457-3642 or by e-mail at ServiceDesk-FTC@ftc.usda.gov. For assistance with publications that include maps, graphs, or similar forms of information, you may also wish to contact our State or local office. You can locate the correct office and phone number at http://offices.sc.egov.usda.gov/locator/app.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.


LEGEND
On NORMANSKILL FORMATION
Sh, Gwke, Chrt, Sl
Osc SCHENECTADY FORMATION
Ss, Gwke, Sh
Dou ONONDAGA LIMESTONE: SCHOHARIE FORMATION
Sh, Ls, Ss
Dha KISKATOM FORMATION
Sh, Ss
Osh SNAKE HILL SHALE
Sh
Dhg HELDERBERG GROUP
LS
Dhm LOWER HAMILTON GROUP
Sh, Slst
GENERAL GEOLOGY MAP
ALBANY COUNTY, NEW YORK
Scale 1:190,080
1 0 1 2 3 Miles
1 0 3 6 Km
N
SCHENECTADY COUNTY
SARATOGA COUNTY
RENSSELAER COUNTY
COLUMBIA COUNTY
GREENE COUNTY
SCHOHARIE COUNTY
GUILDERLAND
KNOX
COLONIE
ALBANY
BETHLEHEM
NEW SCOTLAND
BERNE
WESTERLO
COEYMANS
RENSSELAERVILLE

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



SOIL LEGEND

AREAS DOMINATED BY SOILS FORMED IN GLACIAL TILL

1 NUNDA-BURDETT: Dominantly nearly level to steep, moderately well drained and somewhat poorly drained, medium textured, very deep soils; on uplands

2 FARMINGTON-WASSAIC: Dominantly nearly level to very steep, somewhat excessively drained to moderately well drained, medium textured, shallow to moderately deep soils over limestone; on uplands of the Helderberg Mountain range

3 WELLSBORO-LACKAWANNA-MORRIS: Dominantly gently sloping to steep, well drained to somewhat poorly drained, medium textured, very deep soils that have a fragipan; on uplands

4 LORDSTOWN-KEARSARGE-ARNOT: Dominantly nearly level to very steep, somewhat excessively drained to moderately well drained, medium textured, moderately deep and shallow soils over sandstone and shale; on uplands

AREAS DOMINATED BY SOILS FORMED IN GLACIAL LAKE DEPOSITS

5 COLONIE-ELNORA: Dominantly nearly level to steep, somewhat excessively drained to moderately well drained, coarse textured, very deep soils; on lowland deltas and lake plains

6 SCIO-ELMRIDGE: Dominantly nearly level to gently sloping, moderately well drained, medium textured and moderately coarse textured over fine textured, very deep soils; on lake plains and terraces

7 HUDSON-RHINEBECK: Dominantly nearly level to steep, moderately well drained and somewhat poorly drained, fine textured, very deep soils; on dissected lake plains

8 URBAN LAND-UDIPSAMMENTS-UDORTHENTS: Urbanized areas and dominantly nearly level to steep, somewhat excessively drained and moderately well drained, coarse textured to fine textured, very deep soils; on deltas and plains

AREAS DOMINATED BY SOILS FORMED IN RECENT ALLUVIAL DEPOSITS

9 TEEL-HAMLIN: Dominantly nearly level, well drained and moderately well drained, medium textured, very deep soils; on flood plains

AREAS DOMINATED BY SOILS FORMED IN GLACIAL TILL AND OUTWASH DEPOSITS

10 CHENANGO-VALOIS: Dominantly nearly level to moderately steep, well drained and somewhat excessively drained, moderately coarse textured, very deep soils; on terraces and lower valley sides

Compiled 1990

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

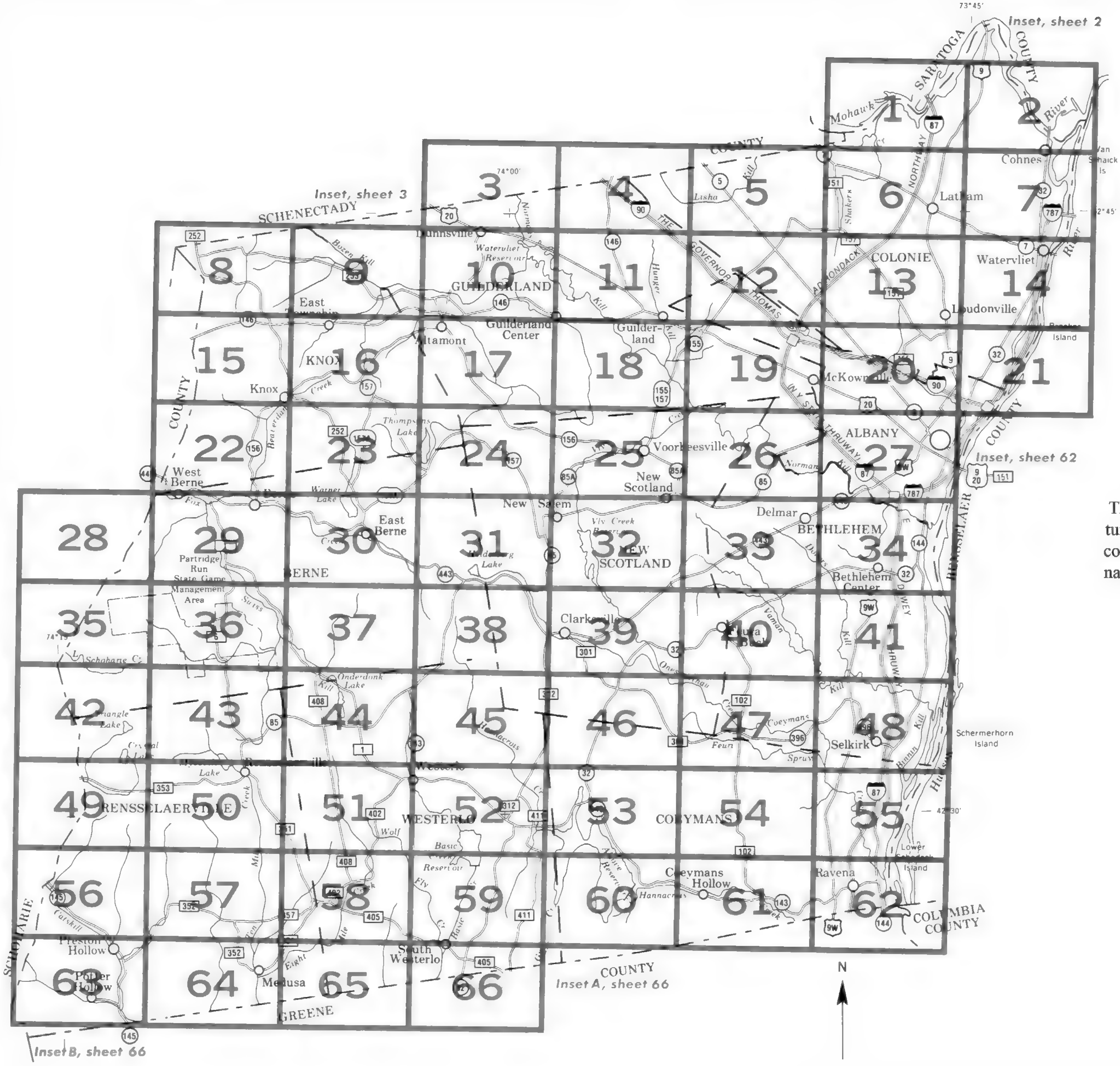
GENERAL SOIL MAP

ALBANY COUNTY, NEW YORK

Scale 1:190,080

1 0 1 2 3 Mi

1 0 3 6 Km



Original text from each individual map sheet read:
This soil survey map was compiled by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Base maps are controlled photomosaics prepared from 1977 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

INDEX TO MAP SHEETS
ALBANY COUNTY, NEW YORK

Scale 1:190,080

1 0 1 2 3 Mi

1 0 3 6 Km

SOIL LEGEND

Map symbols consist of a combination of letters. The first capital letter is the initial one of the map unit name. The lowercase letter that follows separates map units having names that begin with the same letter, except that it does not separate sloping phases. The second capital letter indicates the class of slope. Symbols without a slope letter are for nearly level soils or miscellaneous areas.

SYMBOL	NAME
Ad	Adrian muck
Ae	Allis silt loam
AnA	Angola silt loam, 0 to 3 percent slopes
AnB	Angola silt loam, 3 to 8 percent slopes
AnC	Angola silt loam, 8 to 15 percent slopes
ArC	Arnot very channery silt loam, 8 to 15 percent slopes
AsB	Arnot-Rock outcrop complex, 0 to 8 percent slopes
AsF	Arnot-Rock outcrop complex, 25 to 70 percent slopes
Br	Birdsall mucky silt loam
BuA	Burdett silt loam, 0 to 3 percent slopes
BuB	Burdett silt loam, 3 to 8 percent slopes
BuC	Burdett silt loam, 8 to 15 percent slopes
BvB	Burdett silt loam, 0 to 8 percent slopes, very stony
BxA	Busti silt loam, 0 to 3 percent slopes
BxB	Busti silt loam, 3 to 8 percent slopes
Ca	Carlisle muck
CeA	Castile gravelly loam, 0 to 3 percent slopes
CeB	Castile gravelly loam, 3 to 8 percent slopes
CgB	Chautauqua gravelly silt loam, 3 to 8 percent slopes
CgC	Chautauqua gravelly silt loam, 8 to 15 percent slopes
ChA	Chenango gravelly silt loam, loamy substratum, 0 to 3 percent slopes
ChB	Chenango gravelly silt loam, loamy substratum, 3 to 8 percent slopes
ChC	Chenango gravelly silt loam, loamy substratum, rolling
ChD	Chenango gravelly silt loam, loamy substratum, hilly
CkB	Chenango channery silt loam, fan, 3 to 8 percent slopes
ClA	Claverack loamy fine sand, 0 to 3 percent slopes
ClB	Claverack loamy fine sand, 3 to 8 percent slopes
CoA	Colonie loamy fine sand, 0 to 3 percent slopes
CoB	Colonie loamy fine sand, 3 to 8 percent slopes
CoC	Colonie loamy fine sand, rolling
CoD	Colonie loamy fine sand, hilly
CoE	Colonie loamy fine sand, very hilly
Cs	Cosad loamy fine sand
Du	Dumps
ElA	Elmridge fine sandy loam, 0 to 3 percent slopes
ElB	Elmridge fine sandy loam, 3 to 8 percent slopes
EnA	Elnora loamy fine sand, 0 to 3 percent slopes
EnB	Elnora loamy fine sand, 3 to 8 percent slopes
FaB	Farmington silt loam, 0 to 8 percent slopes
FrB	Farmington-Rock outcrop complex, 0 to 8 percent slopes
FrC	Farmington-Rock outcrop complex, 8 to 15 percent slopes
FrF	Farmington-Rock outcrop complex, 25 to 60 percent slopes
FwC	Farmington-Wassaic-Rock outcrop complex, rolling
Fx	Fluvaquents-Udifluvents complex, frequently flooded
Gr	Granby loamy fine sand
Ha	Hamlin silt loam
HnA	Hornell silt loam, 0 to 3 percent slopes
HnB	Hornell silt loam, 3 to 8 percent slopes
HnC	Hornell silt loam, 8 to 15 percent slopes
HoA	Howard gravelly silt loam, 0 to 3 percent slopes
HoB	Howard gravelly silt loam, 3 to 8 percent slopes
HoC	Howard gravelly silt loam, rolling
HuB	Hudson silt loam, 3 to 8 percent slopes
HuC	Hudson silt loam, 8 to 15 percent slopes
HuD	Hudson silt loam, hilly
HuE	Hudson silt loam, 25 to 45 percent slopes
In	Ilion silt loam
KeB	Kearsarge silt loam, 0 to 8 percent slopes
LaC	Lackawanna channery silt loam, 8 to 15 percent slopes
LaD	Lackawanna channery silt loam, 15 to 25 percent slopes
LcE	Lackawanna channery silt loam, 15 to 35 percent slopes, very stony
LoA	Lordstown channery silt loam, 0 to 3 percent slopes
LoB	Lordstown channery silt loam, 3 to 8 percent slopes
LoC	Lordstown channery silt loam, 8 to 15 percent slopes
LoD	Lordstown channery silt loam, 15 to 25 percent slopes
LrE	Lordstown-Arnot complex, 25 to 45 percent slopes, very rocky

SYMBOL	NAME
Ma	Madalin silt loam
MbB	Manlius channery silt loam, 3 to 8 percent slopes
MbC	Manlius channery silt loam, 8 to 15 percent slopes
MbD	Manlius channery silt loam, 15 to 25 percent slopes
MbE	Manlius channery silt loam, 25 to 35 percent slopes
Mh	Medihemists and Hydraquents, ponded
Mk	Middlebury silt loam
MoB	Morris channery silt loam, 3 to 8 percent slopes
MoC	Morris channery silt loam, 8 to 15 percent slopes
MrB	Morris channery silt loam, 3 to 8 percent slopes, very stony
NaB	Nassau channery silt loam, undulating
NaC	Nassau channery silt loam, rolling
NrC	Nassau very channery silt loam, rolling, very rocky
NrD	Nassau very channery silt loam, hilly, very rocky
NuB	Nunda silt loam, 3 to 8 percent slopes
NuC	Nunda silt loam, 8 to 15 percent slopes
NuD	Nunda silt loam, 15 to 25 percent slopes
NuE	Nunda silt loam, 25 to 35 percent slopes
NvC	Nunda silt loam, 3 to 15 percent slopes, very stony
NvE	Nunda silt loam, 15 to 35 percent slopes, very stony
OqB	Oquaga channery silt loam, 3 to 8 percent slopes
OqC	Oquaga channery silt loam, 8 to 15 percent slopes
OqD	Oquaga channery silt loam, 15 to 25 percent slopes
Pa	Palms muck
Pm	Pits, gravel
Pn	Pits, quarry
Ra	Raynham very fine sandy loam
RhA	Rhinebeck silty clay loam, 0 to 3 percent slopes
RhB	Rhinebeck silty clay loam, 3 to 8 percent slopes
RkA	Riverhead fine sandy loam, 0 to 3 percent slopes
RkB	Riverhead fine sandy loam, 3 to 8 percent slopes
RkC	Riverhead fine sandy loam, 8 to 15 percent slopes
ScA	Scio silt loam, 0 to 3 percent slopes
ScB	Scio silt loam, 3 to 8 percent slopes
Sh	Shaker fine sandy loam
St	Stafford loamy fine sand
SuA	Sudbury fine sandy loam, 0 to 3 percent slopes
SuB	Sudbury fine sandy loam, 3 to 8 percent slopes
Te	Teel silt loam
To	Tioga silt loam
TuB	Tuller-Greene complex, 0 to 8 percent slopes
Ud	Udipsamments, smoothed
Ue	Udipsamments, dredged
Uf	Udipsamments-Urban land complex
Ug	Udorthents, loamy
Uh	Udorthents, clayey-Urban land complex
Uk	Udorthents, loamy-Urban land complex
UnA	Unadilla silt loam, 0 to 3 percent slopes
UnB	Unadilla silt loam, 3 to 8 percent slopes
UnC	Unadilla silt loam, 8 to 15 percent slopes
UnD	Unadilla silt loam, 15 to 25 percent slopes
Ur	Urban land
Us	Urban land-Udipsamments complex
Ut	Urban land-Udorthents complex
VaB	Valois gravelly loam, 3 to 8 percent slopes
VaC	Valois gravelly loam, 8 to 15 percent slopes
VaD	Valois gravelly loam, 15 to 25 percent slopes
Wa	Wakeland silt loam
WcA	Wassaic silt loam, 0 to 3 percent slopes
WcB	Wassaic silt loam, 3 to 8 percent slopes
WcC	Wassaic silt loam, 8 to 15 percent slopes
WnC	Wassaic-Nellis silt loams, rolling, very rocky
Wo	Wayland silt loam
WrB	Wellsboro silt loam, 3 to 8 percent slopes
WrC	Wellsboro silt loam, 8 to 15 percent slopes
WrD	Wellsboro silt loam, 15 to 25 percent slopes
WsC	Wellsboro silt loam, 3 to 15 percent slopes, very stony

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline and neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool — Smith Airport; FLOOD POOL LINE

STATE COORDINATE TICK

LAND DIVISION CORNER (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEM & DESIGNATIONS

- Interstate — I-66 (21)
- Federal — US-20 (173)
- State — NY-5 (28)
- County, farm or ranch — (1283)

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small — water; w

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) — Indian Mound
- Located object (label) — Tower
- Tank (label) — Gas
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) — CANAL
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial — water; w
- Intermittent — int; i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS — CoA; ElB

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

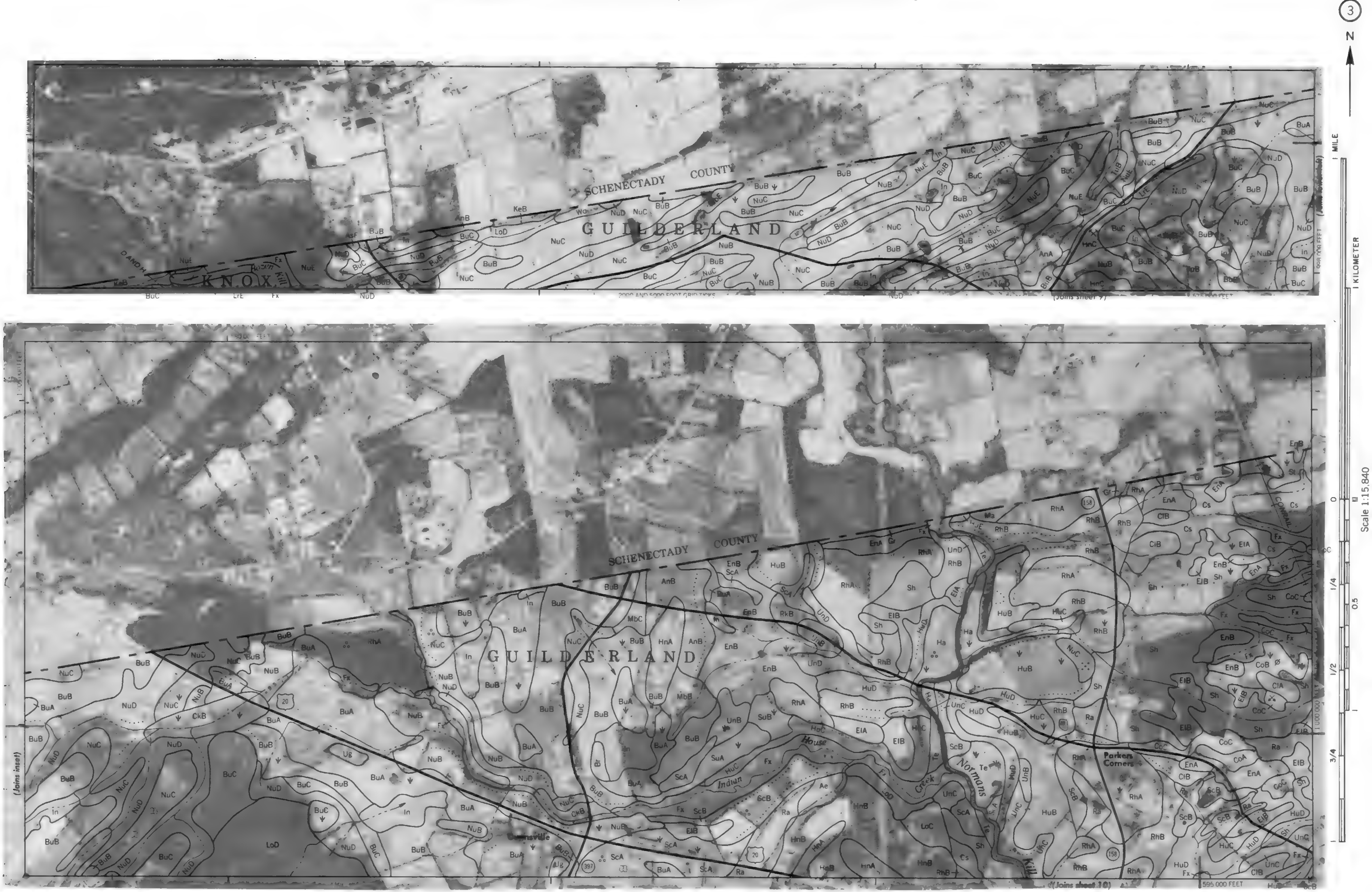
SOIL SAMPLE (normally not shown)

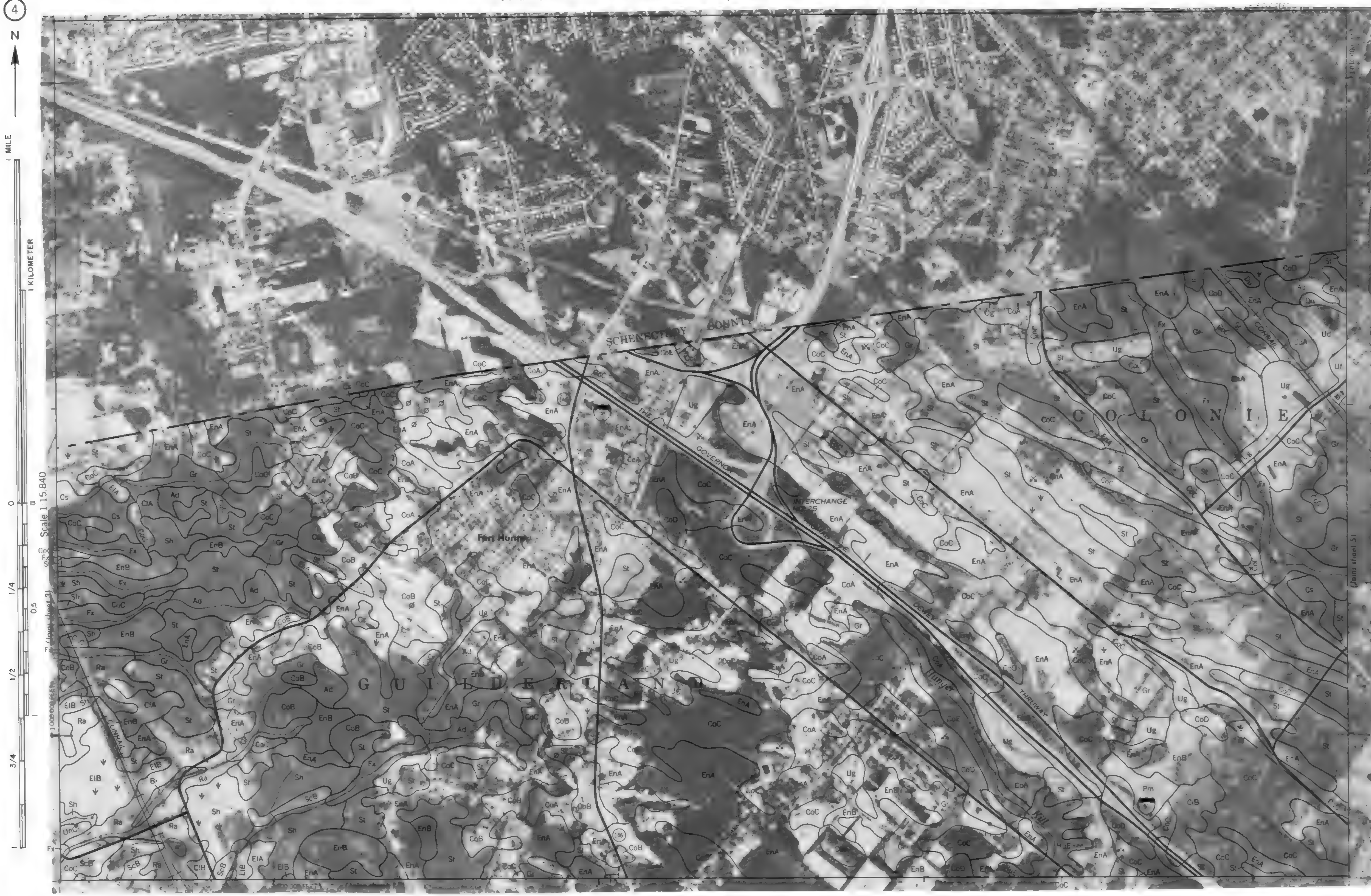
MISCELLANEOUS

- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot
- Bouldery spot
- Finer textured spot


1
N
SARATOGA COUNTY
MOHAWK RIVER
ERIE CANAL
Dunsbach Ferry
Mohawk View
C O L O N I E
SCHENECTADY COUNTY
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5


2
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins inset)
(Joins upper left)
(Joins sheet 6)
SARATOGA COUNTY
MOHAWK RIVER
ERIE CANAL
CRESCENT DAM
Crescent Station
C O L O N I E
Bought Corners
COHOES
Reservoir
Cohoes Falls
DAM
Simmons Island
VAN SCHAICK ISLAND
HUDSON RIVER
RENSSELAER CO

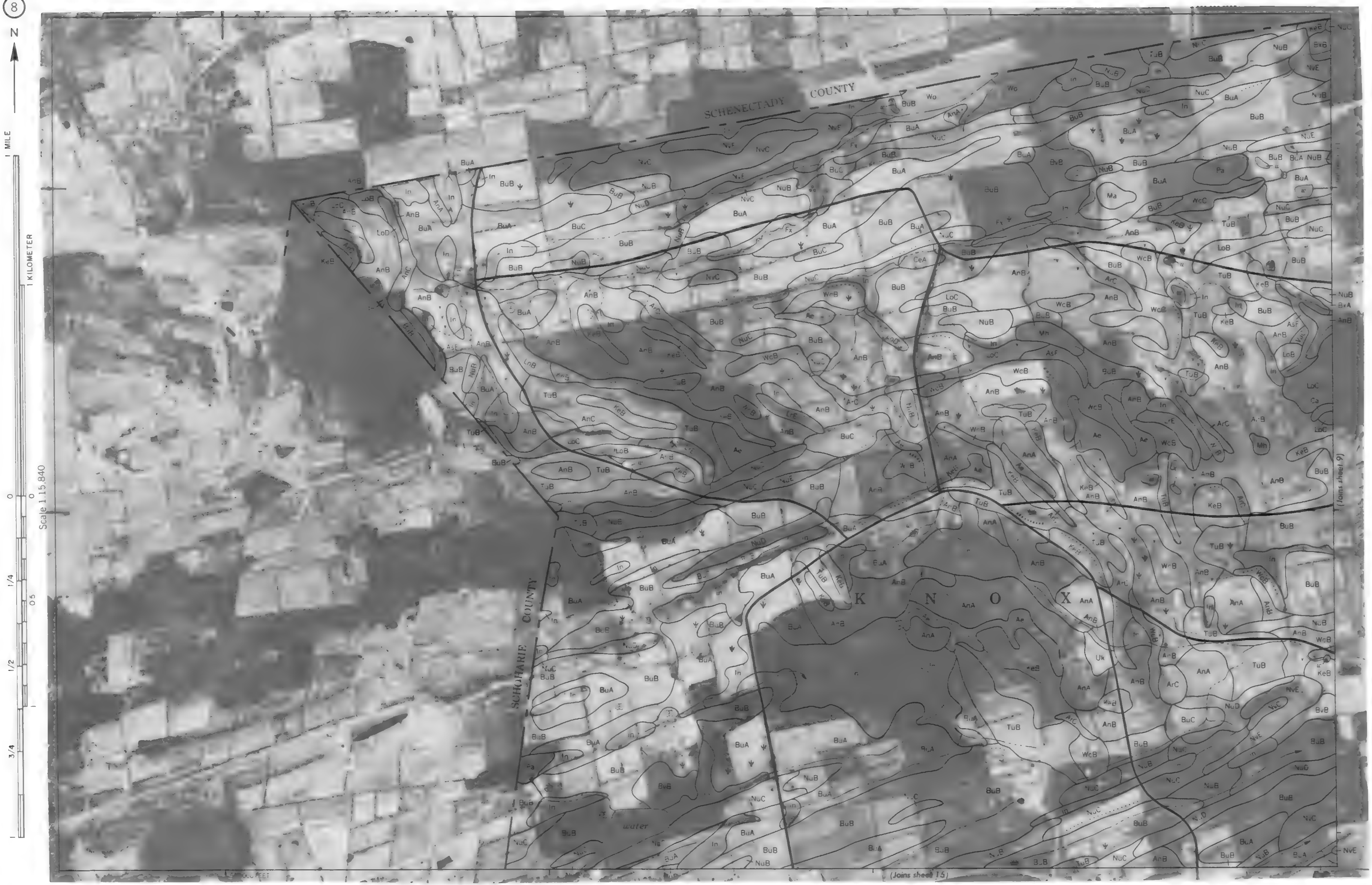

3
N
SCHENECTADY COUNTY
GUILDERLAND
KNOX
SCHENECTADY COUNTY
GUILDERLAND
Indian
House
Creek
Normans
Kill
Parkers Corners
(Joins inset)
(Joins sheet 10)
595 000 FEET
2000 AND 5000 FOOT GRID TICKS
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
0.5

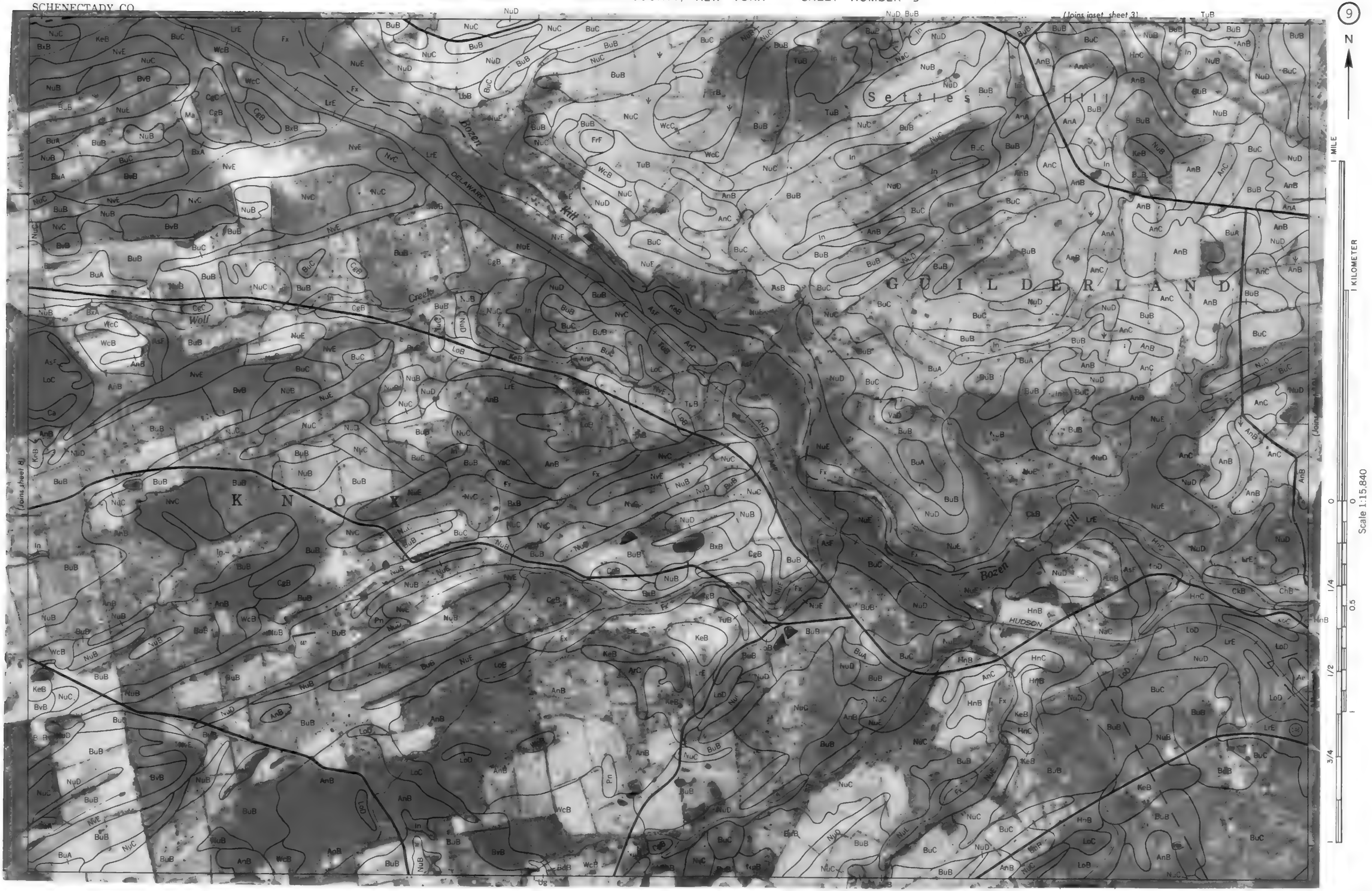

4
N
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
0.5
1/2
3/4
1
(Joins sheet 3)
(Joins sheet 5)
SCHENECTADY COUNTY
COLONIE
GUILDERLAND
Fort Hunter
INTERCHANGE NO. 25
THE GOVERNOR THOMAS E. DEWEY THRUWAY
CONRAIL
Kill
146

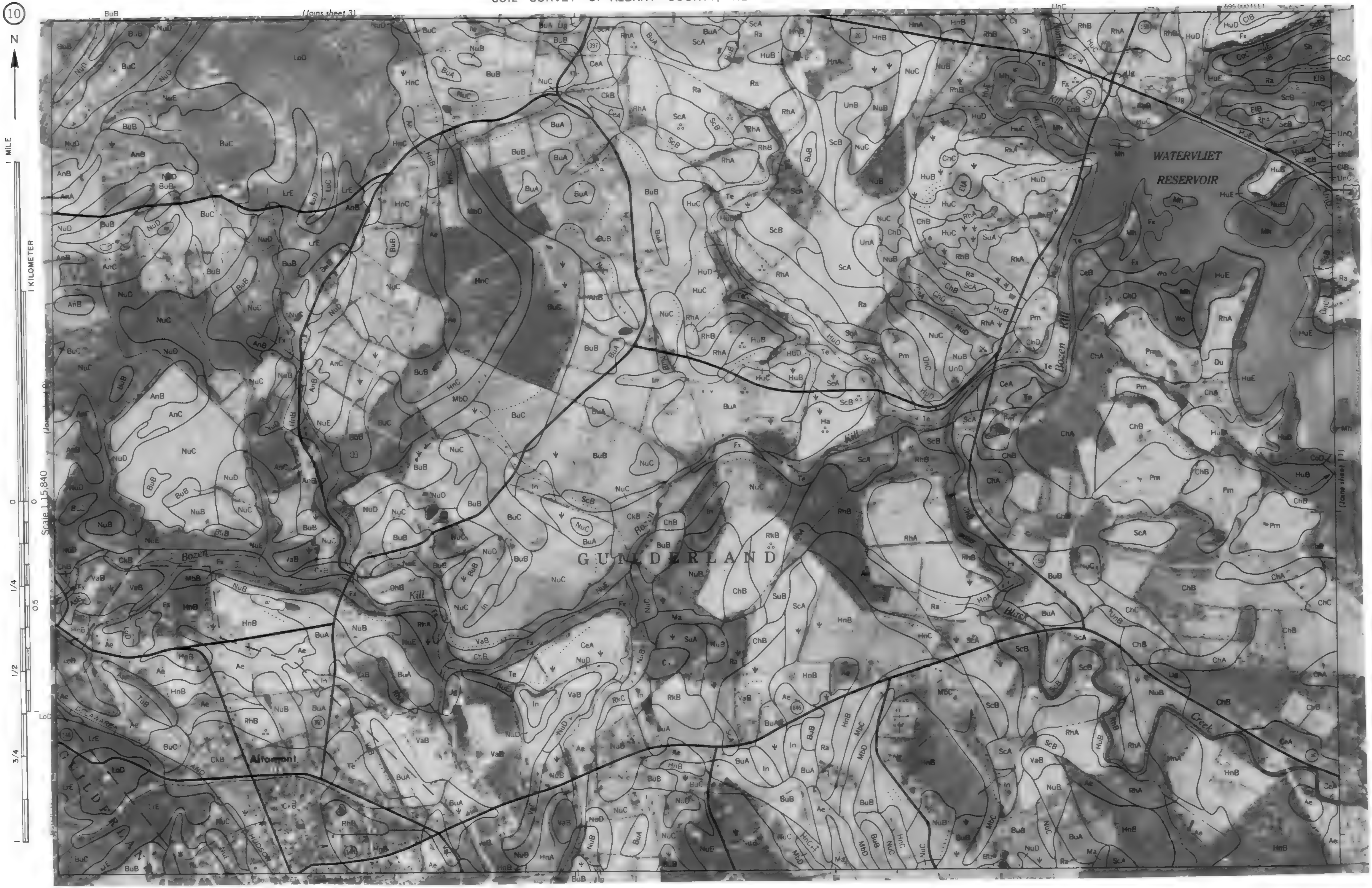

5
N
SCHENECTADY COUNTY
Stanford Heights
COLONIE
Lisha Kill
Lisha Kill
CONRAIL
MAYWOOD
(Joins sheet 4)
GUILDERLAND
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
0.5


6
N
1 MILE
1 KILOMETER
Scale 1:15 840
water
Verdoy
Whitney Estates
C O L O N I E
ALBANY MUNICIPAL AIRPORT
NORTHWAY
INTERCHANGE NO 6
Kill
Creek
Shakers
Ann Lee Pond
Shakers
LATHAM
(Joins sheet 13)
(Joins sheet 7)

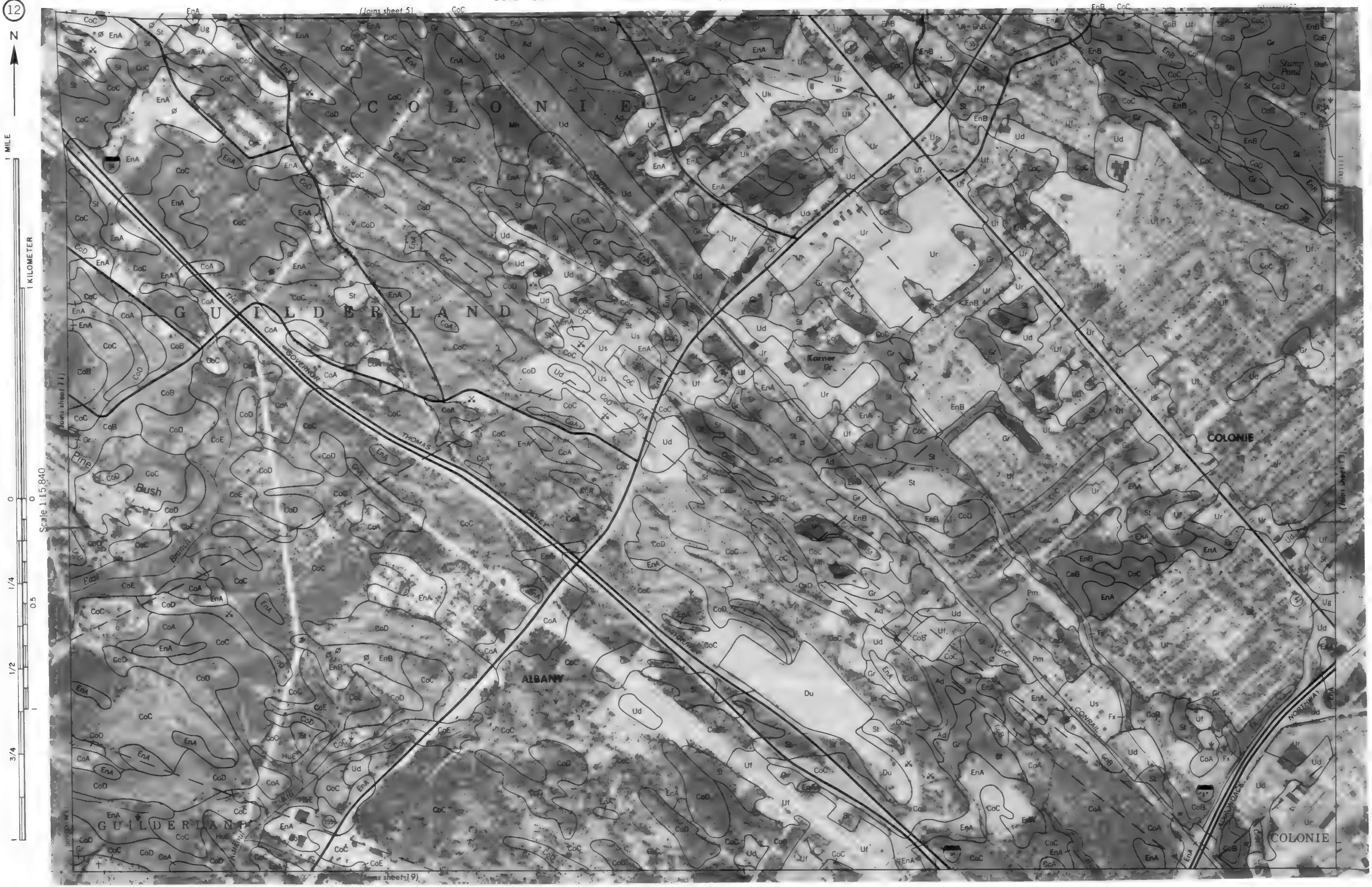

7
N
(Joins sheet 2)
(Joins sheet 6)
(Joins sheet 14)
550 000 FEET
COHOES
Simmons Island
VAN SCHAIK ISLAND
MOHAWK RIVER
HUDSON RIVER
CHAMPLAIN CANAL
RENSSELAER COUNTY
HUDSON AND DELAWARE
Salt Kill
C O L O N I E
GREEN ISLAND
TROY LOCK
Stony Island
Starbuck Island
Watervliet
1 MILE
1 KILOMETER
Scale 1:15,840

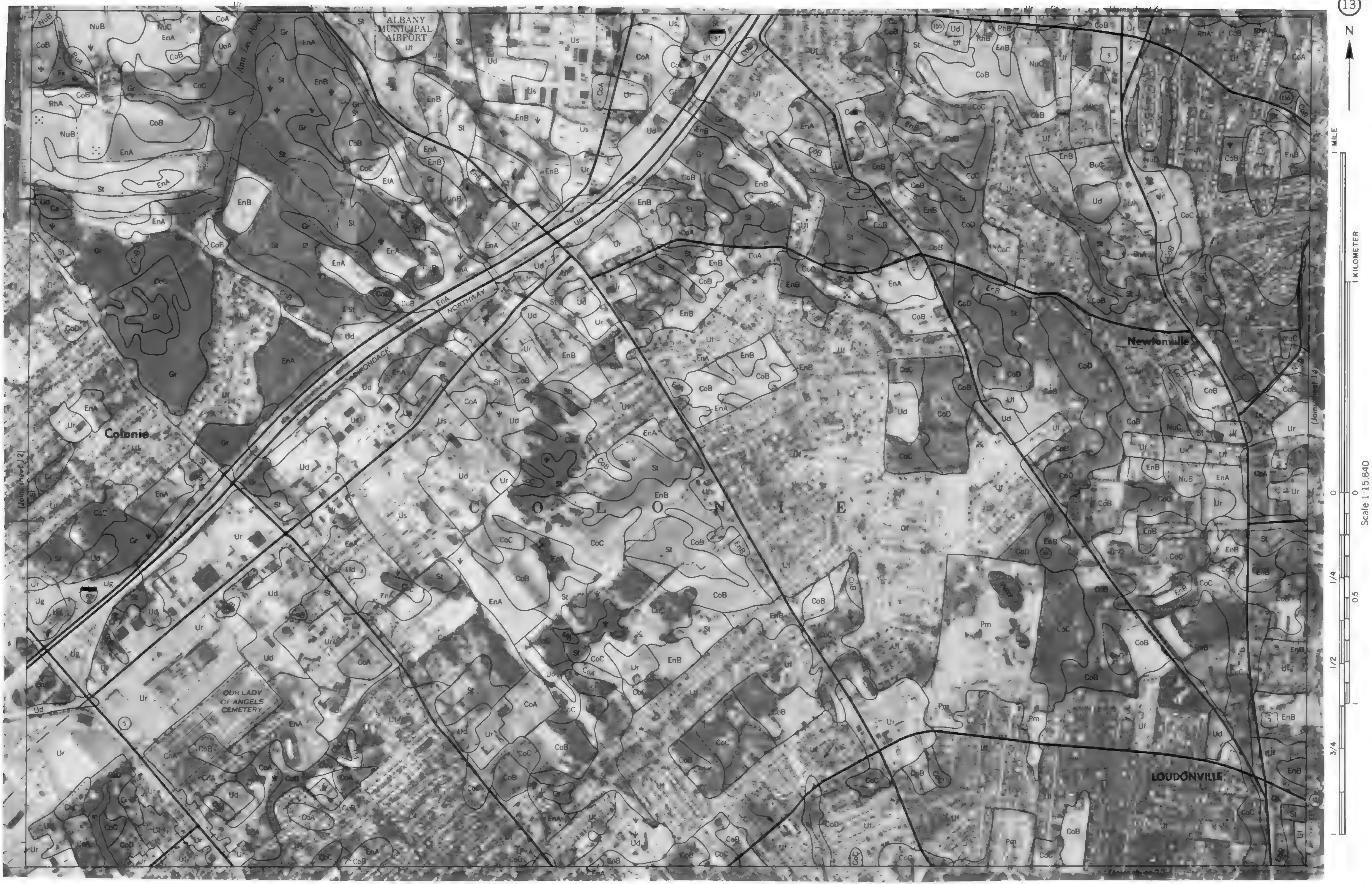

8
N
1 MILE
1 KILOMETER
Scale 1:15 840
SCHENECTADY COUNTY
SCHOHARIE COUNTY
K N O X
(Joins sheet 9)
(Joins sheet 15)
water


9
N
SCHENECTADY CO.
(Joins inset sheet 3)
(Joins sheet 8)
Settles Hill
GUILDERLAND
KNOX
Bozen Kill
Wolf Creek
DELAWARE AND HUDSON
1 MILE
1 KILOMETER
Scale 1:15,840


10
N
(Joins sheet 3)
WATERVLIET
RESERVOIR
GUILDERLAND
Altamont
Bozen Kill
Black Creek
Kill
Bozen
Creek
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
0.5
1/2
3/4
1
(Joins sheet 9)
(Joins sheet 11)
695 000 FEET


11
N
WATERVLIET
RESERVOIR
G U I L D E R L A N D
Fullers
CONRAIL
McCormack Corners
Hartmans Corners
NORMANS KILL
Hunger Kill
Glass Pond
Guilderland
Guilderland Center
Albany
Black Creek
East Branch
UNITED STATES
MILITARY RESERVATION
(Joins sheet 10)
(Joins sheet 12)
(Joins sheet 8)
1 MILE
1 KILOMETER
Scale 1:15 840

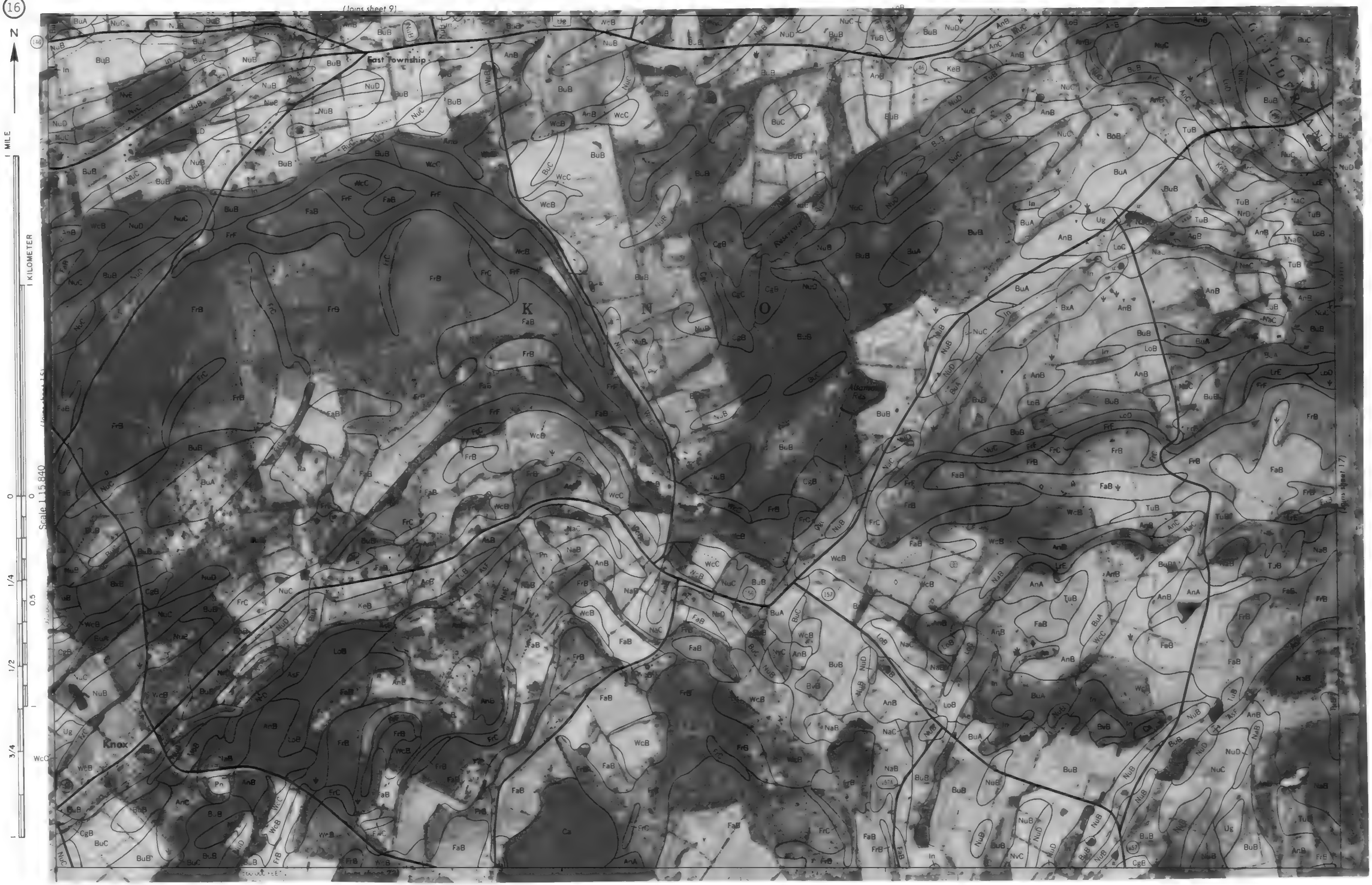

12
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins sheet 5)
COLONIE
GUILDERLAND
ALBANY
Pine Bush
East Branch
Stump Pond
GOVERNOR THOMAS E. DEWEY THRUWAY
CONRAIL
ADIRONDACK NORTHWAY
(Joins sheet 19)
(Joins sheet 11)
(Joins sheet 13)


13
N
ALBANY MUNICIPAL AIRPORT
Ann Lee Pond
ADIRONDACK NORTHWAY
Colonie
C O L O N I E
Newtonville
LOUDONVILLE
OUR LADY OF ANGELS CEMETERY
(Joins sheet 12)
(Joins sheet 14)
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
0.5


14
N
(Joins sheet 7)
COLONIE
Watervliet
GREEN ISLAND
Starbuck Island
HUDSON RIVER
RENSSELAER COUNTY
ST. PATRICKS CEMETERY
ALBANY RURAL CEMETERY
ST. AGNES CEMETERY
Menands
Breaker Island
Scale 1:15 840
1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5


15
N
(Joins sheet 8)
(Joins sheet 16)
(Joins sheet 22)
West Township
SCHOHARIE COUNTY
K N O X
MILE
KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5

16


(Joins sheet 9)
(Joins sheet 17)
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5
East Township
Knox
K N O X
Reservoir

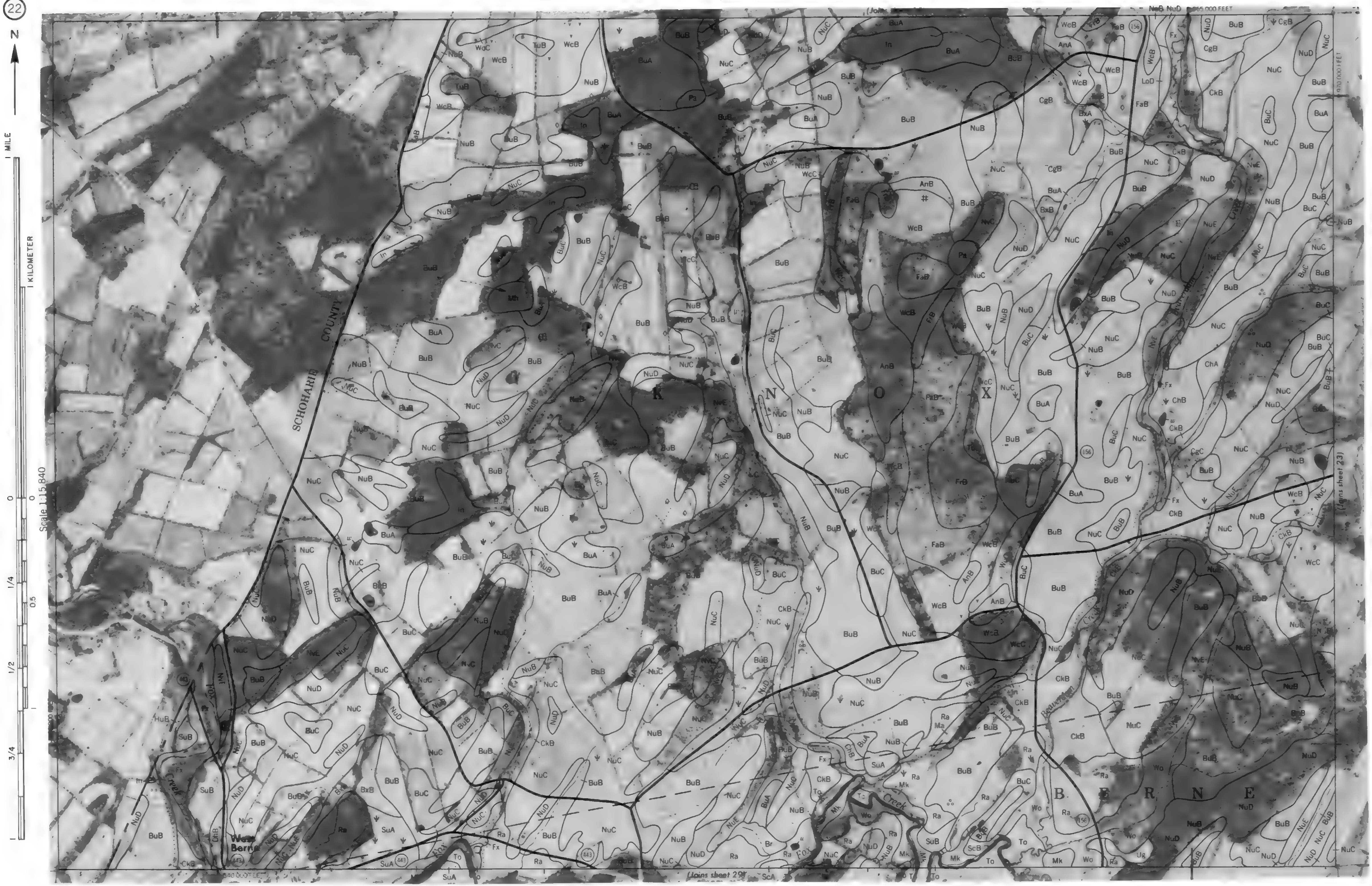

17
N
Altamont
G U I L D E R L A N D
K N O X
JOHN BOYD
THATCHER
STATE PARK
Meadowdale
DELAWARE
AND
HUDSON
Black Creek
Black
Creek
(Joins sheet 16)
(Joins sheet 18)
(Joins sheet 24)
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
0.5

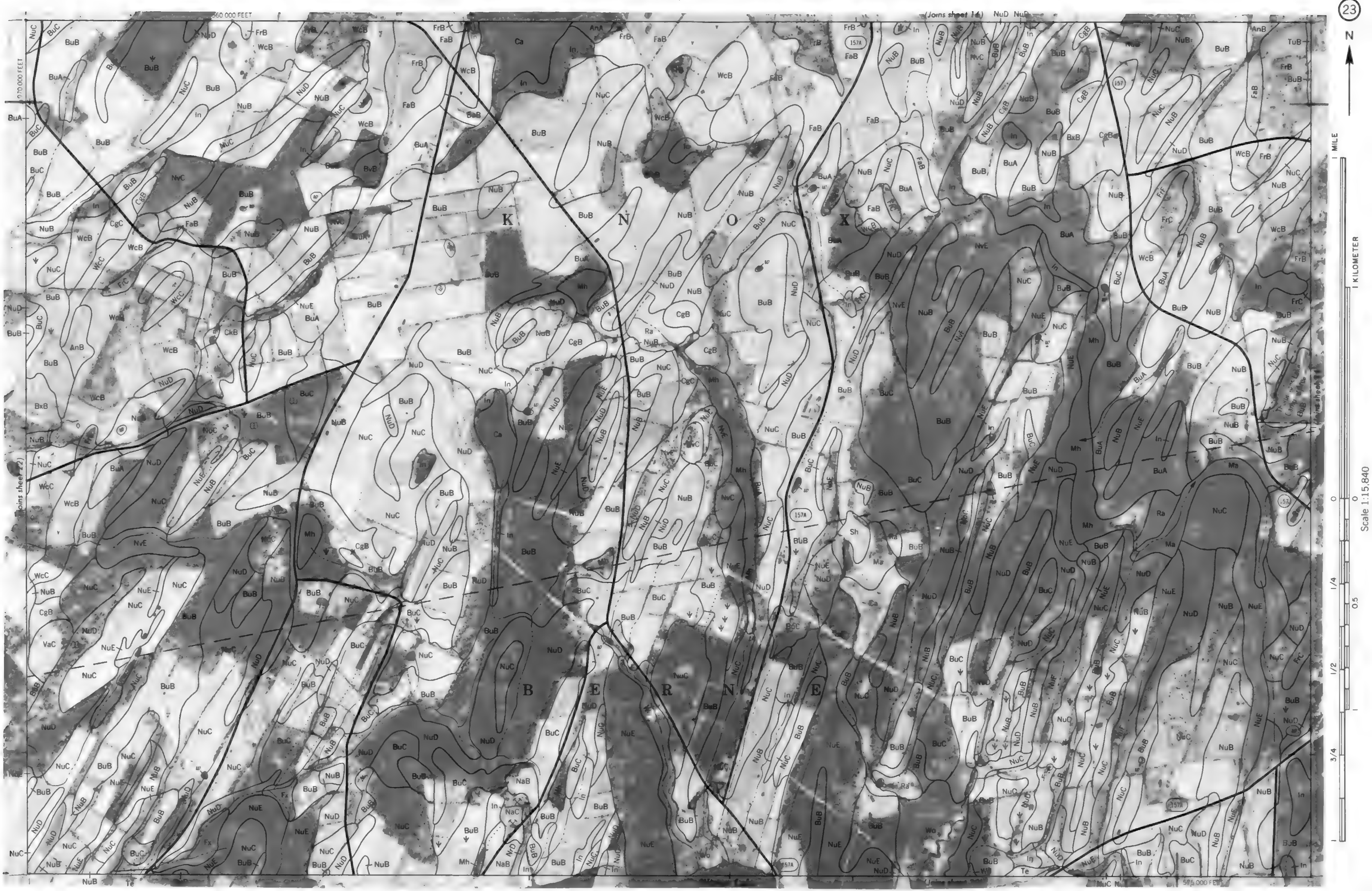

18
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins sheet 11)
(Joins sheet 19)
(Joins sheet 25)
UNITED STATES MILITARY RESERVATION
G U I L D E R L A N D
NORMANS KILL
NORMANS
KILL
CONRAIL
Black Cr
Hunger Kill
Krum Kill
Blockhouse Creek
Creek


19
N
PROSPECT HILL CEMETERY
WESTMERE
Blockhouse Creek
Rensselaer Lake
Albany
McKownville
N.Y.S.U.
North Bethlehem
Albany
P I N E B U S H
G U I L D E R L A N D
N E W S C O T L A N D
B E T H L E H E M
NORMANS KILL
Krum Kill
THRUWAY
THE GOVERNOR THOMAS DEWEY
ADIRONDACK NORTHWAY
(Joins sheet 18)
(Joins sheet 20)
1 MILE
1 KILOMETER
Scale 1:15,840


20
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins sheet 13)
(Joins sheet 21)
C O L O N I E
ROESSLEVILLE
CONRAIL
NEW YORK STATE UNIVERSITY
West Albany
ALBANY
Tivoli Lake
Reservoir


21
COLONIE
COLONIE
N
Littles Lake
ALBANY RURAL CEMETERY
ST. AGNES CEMETERY
HUDSON
Little River
Breaker Island
Menands
DELAWARE
Lower Patroon Island
HUDSON RIVER
RENSSELAER COUNTY
Albany
(Joins sheet 20)
MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
Scale 1:15,840


22
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0
0.5
1
SCHOHARIE COUNTY
K N O X
B E R N E
West Berne
Fox Creek
Beaverdam Creek
(Joins sheet 23)
(Joins sheet 29)
156
443

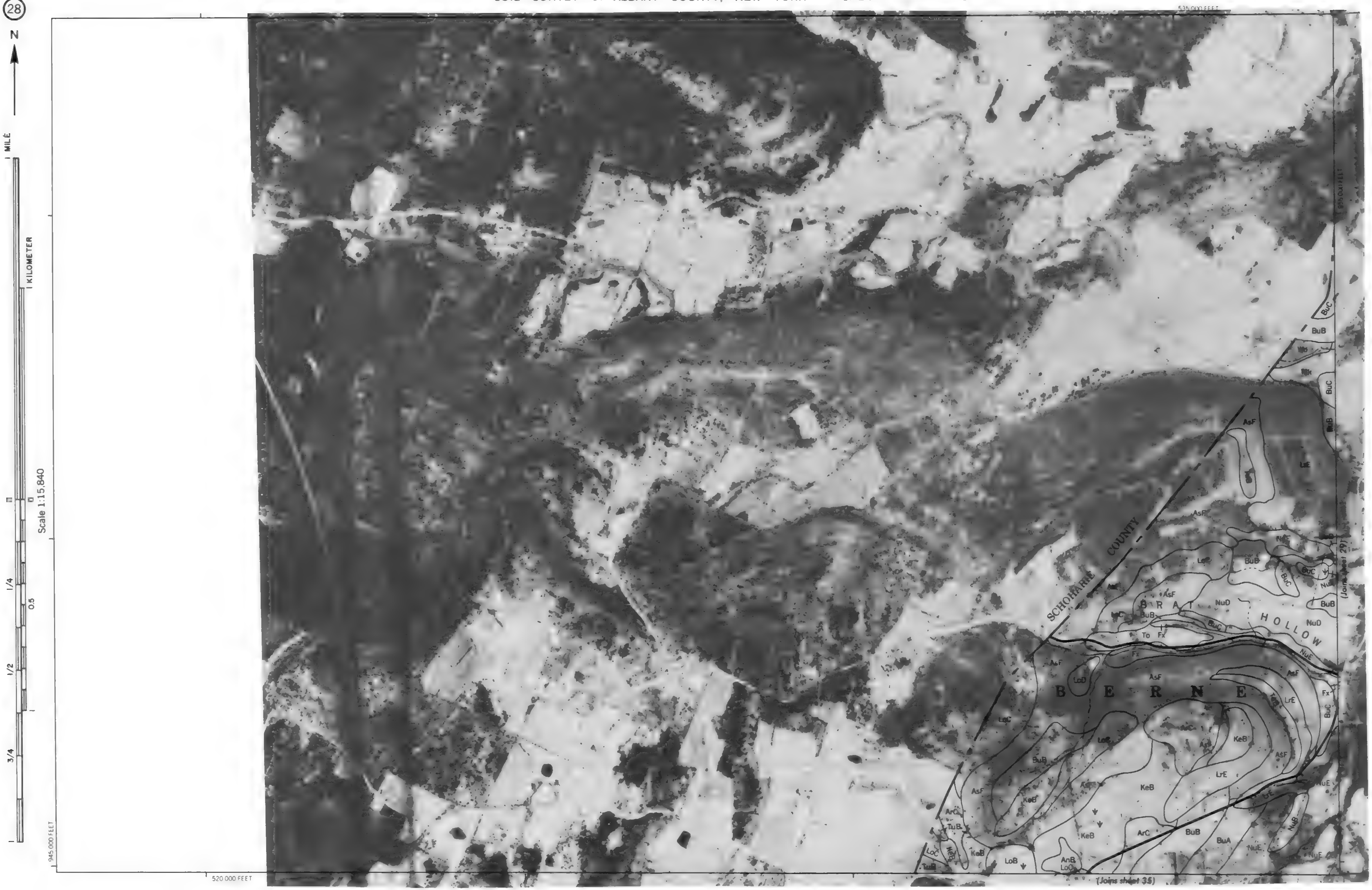

23
N
360 000 FEET
270 000 FEET
575 000 FEET
(Joins sheet 14)
(Joins sheet 22)
K N O X
B E R N E
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
0.5
1/2
3/4
157A
157


24
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins sheet 17)
G U I L D E R L A N D
K N O X
B E R N E
N E W S C O T L A N D
Horseshoe Lot
Indian Ladder
Thompsons Lake
Mine Lot Falls
JOHN BOYD THATCHER STATE PARK
(Joins sheet 31)
(Joins sheet 25)


25
N
GUILDERLAND
VOORHEESVILLE
NEW SCOTLAND
DELAWARE
HUDSON
CONRAIL
Black Creek
Vly Creek
Vloman Kill
Normanskill
MILE
KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5
960 000 FEET
615 000
Join sheet 32


26
N
(Joins sheet 19)
1 MILE
1 KILOMETER
Scale 1:15 840
NEW SCOTLAND
BETHLEHEM
Tri Village Airport
NORMANS KILL
Krum Kill
Karlsfeld
SLINGERLANDS
DELAWARE
HUDSON
(Joins sheet 27)
(Joins sheet 33)
(Joins sheet 25)


27
BETHLEHEM
(Joins sheet 20)
ALBANY
Empire State Plaza
BETHLEHEM
NORMANS KILL
THE GOVERNOR THOMAS E. DEWEY THRUWAY
Normansville
Elsmere
GRACELAND CEMETERY
HUDSON RIVER
D AND H
CONRAIL
655 000 FEET
640 000 FEET
N
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
0.5
1/2
3/4
1
HuD
HuE
HuB
HuC
ElB
ElA
UnB
UnC
UnD
ScB
ScA
Ra
RhB
RhA
Ha
Te
Ug
Uh
Ur
Uf
Sh
CoA
CoB
ClA
Wa
MdC


28
N
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
0.5
1/2
3/4
1
535 000 FEET
945 000 FEET
520 000 FEET
950 000 FEET
SCHOHARIE COUNTY
BRAT HOLLOW
BERNE
(Joins sheet 29)
(Joins sheet 35)

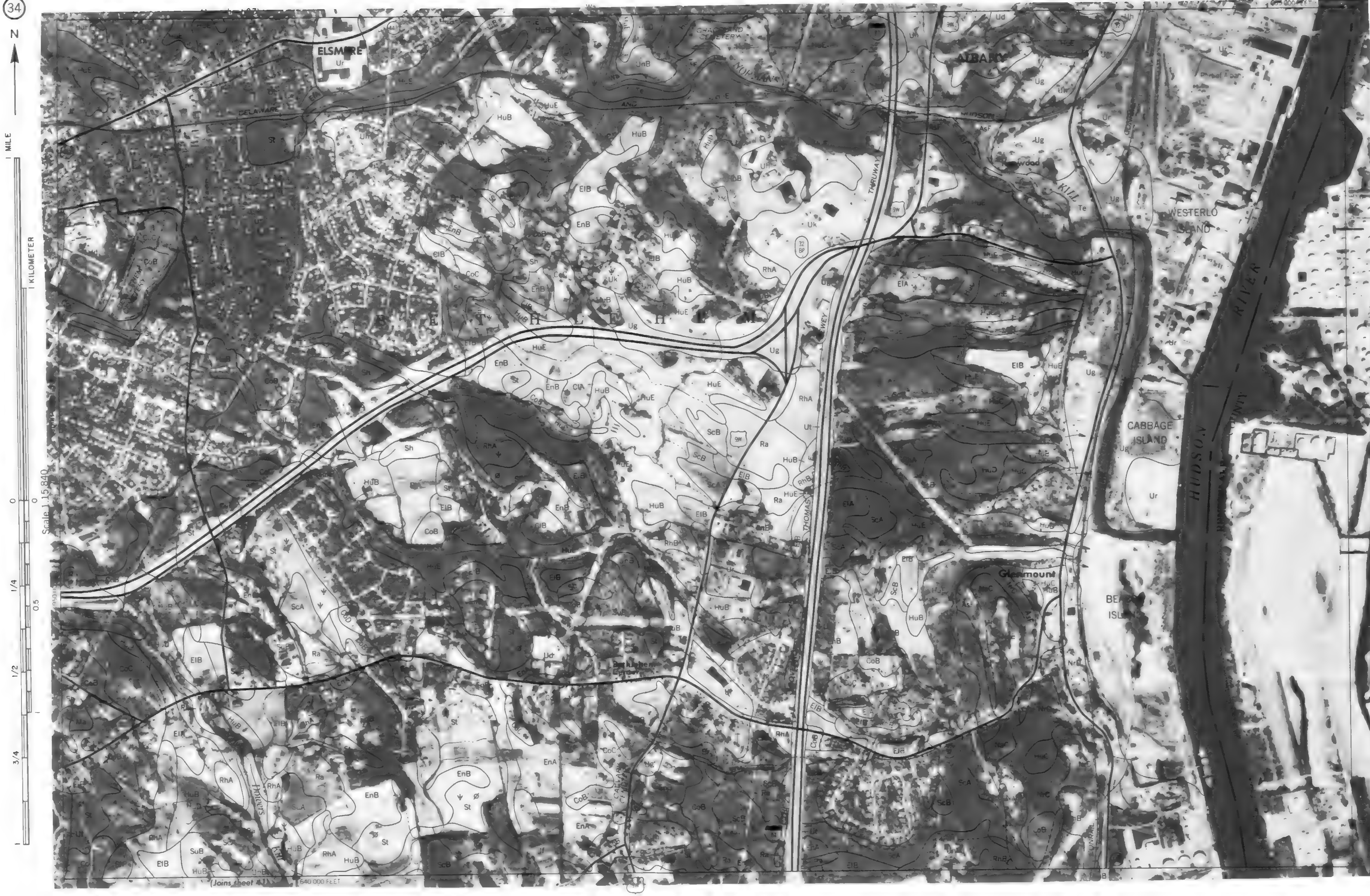
SOIL SURVEY OF ALBANY COUNTY, NEW YORK — SHEET NUMBER 29


30
N
(Joins sheet 23)
(Joins sheet 29)
(Joins sheet 31)
Warner
Lake
East
Berne
Bensons
Corners
Fox
Creek
B E R N E
HILL
1 MILE
1 KILOMETER
Scale 1:15 840


31
N
B E R N E
H E L D E R B E R G
M O U N T A I N S
N E W S C O T L A N D
Helderberg Lake
Wolf Hill
Mallorys Corners
Creek
water
(Joins sheet 30)
(Joins sheet 38)
(Joins sheet 24)
(Joins sheet 32)
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5

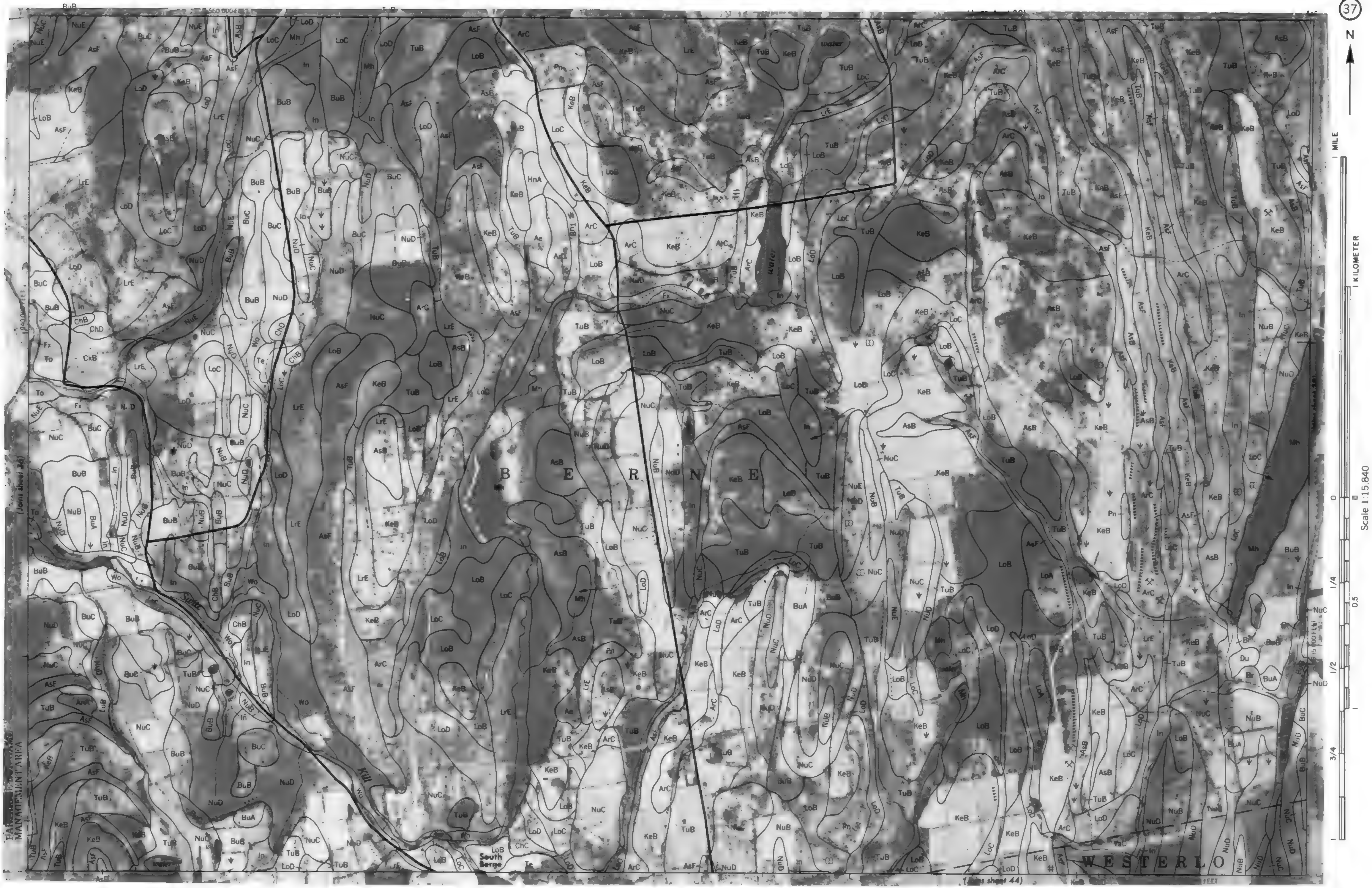

32
N
New Salem
New Scotland
N E W S C O T L A N D
Vly Creek Reservoir
Diamond Hill
MOUNT PLEASANT CEMETERY
(Joins sheet 31)
(Joins sheet 33)
1 MILE
1 KILOMETER
Scale 1:15 840

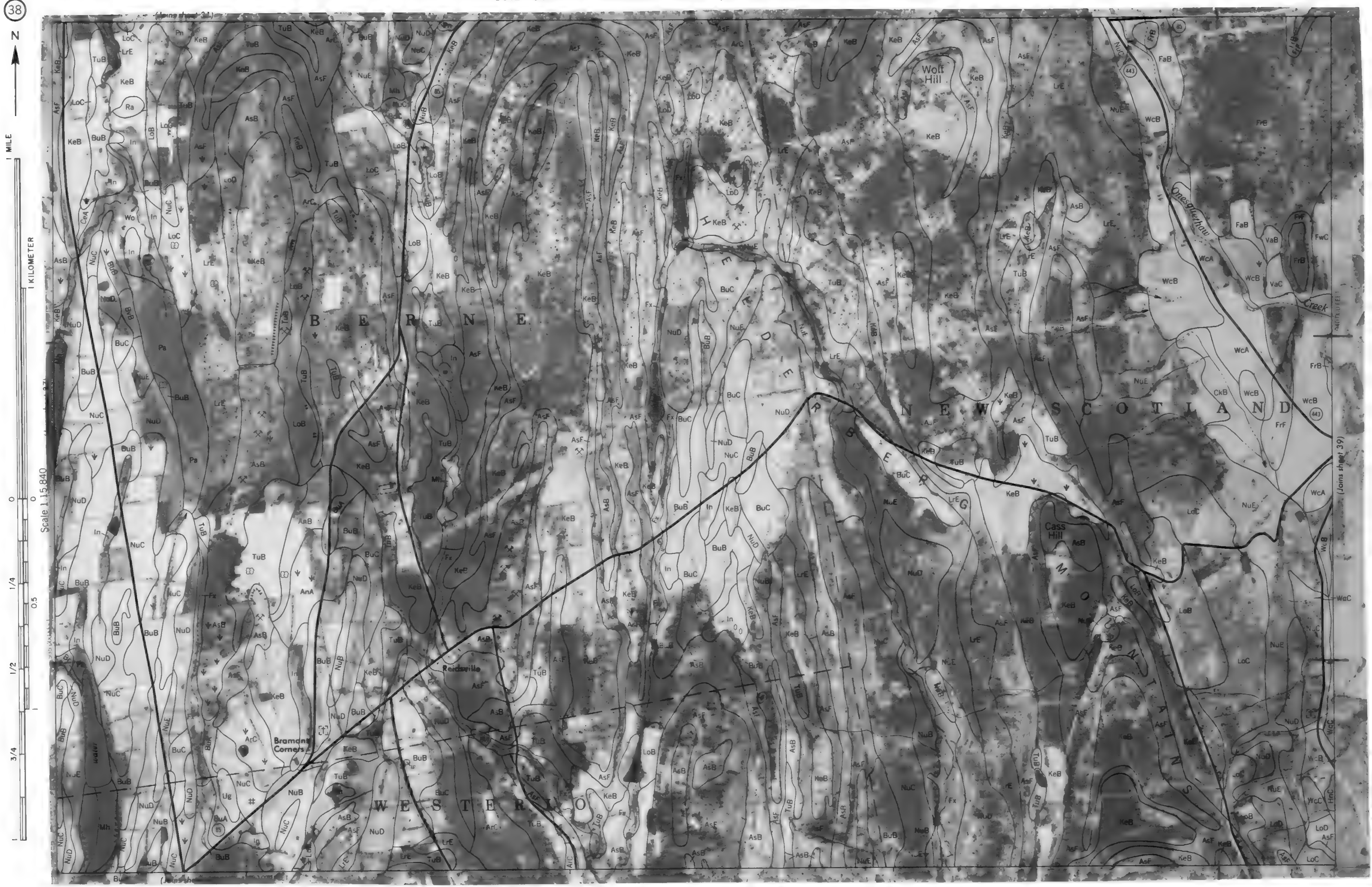

33
N
SLINGERLANDS
DELMAR
FIVE RIVERS
ENVIRONMENTAL
EDUCATION
CENTER
NEW SCOTLAND
BETHLEHEM
Unionville
Houcks Corners
DELAWARE AND HUDSON
CONRAIL
Phillipin Kill
Vloman Kill
(Joins sheet 32)
(Joins sheet 40)
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
0.5


34
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
0.5
1/2
3/4
1
ELSMERE
DELAWARE
AND
HUDSON
THRUWAY
ALBANY
WESTERLO
ISLAND
CABBAGE
ISLAND
HUDSON
RIVER
KILL
Glenmount
(Joins sheet 41)
640 000 FEET


35
N
(Joins sheet 28)
(Joins sheet 36)
520 000 FEET
940 000 FEET
935 000 FEET
PARTRIDGE RUN GAME MANAGEMENT AREA
SCHOHARIE COUNTY
B E R N E
COOK HILL
Little Schoharie Creek
MILE
KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
1
0.5


36
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins sheet 29)
(Joins sheet 43)
(Joins sheet 37)
WEST MOUNTAIN
PARTRIDGE RUN GAME MANAGEMENT AREA
PARTRIDGE RUN GAME MANAGEMENT AREA
PARTRIDGE RUN GAME MANAGEMENT AREA
B E R N E
THE GULF
Switz Kill
White Birch Pond
Fawn Lake
water


37
N
1 MILE
1 KILOMETER
Scale 1:15 840
B E R N E
W E S T E R L O
South Berne
Switz
Kill
(Joins sheet 36)
(Joins sheet 44)
water

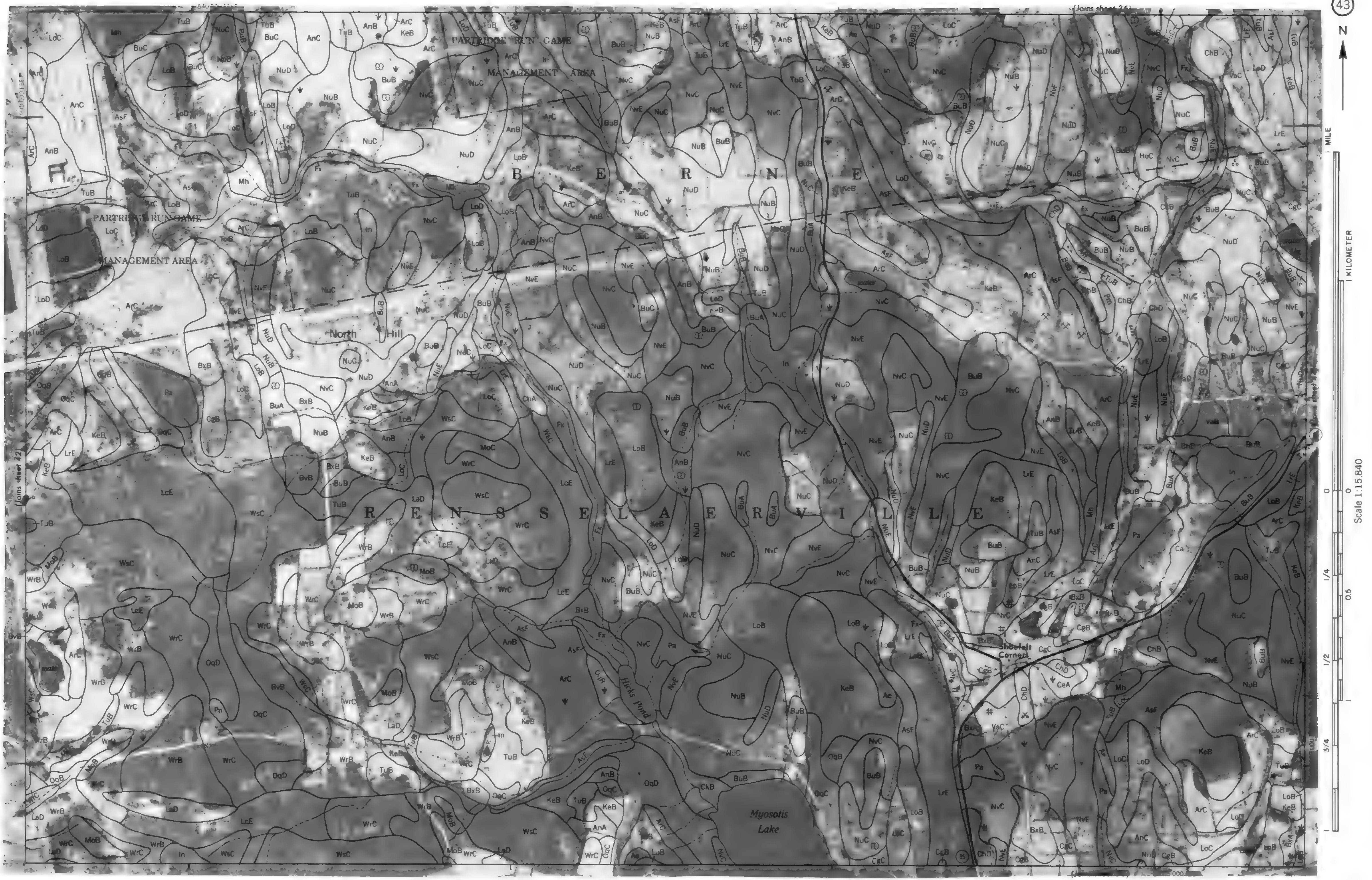

38
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5
(Joins sheet 39)
BERNE
HELDERBERG
NEW SCOTLAND
WESTERLO
HELDERBERG MOUNTAINS
Wolf Hill
Cass Hill
Reidsville
Bramont Corners
Onesquethaw Creek
85
443

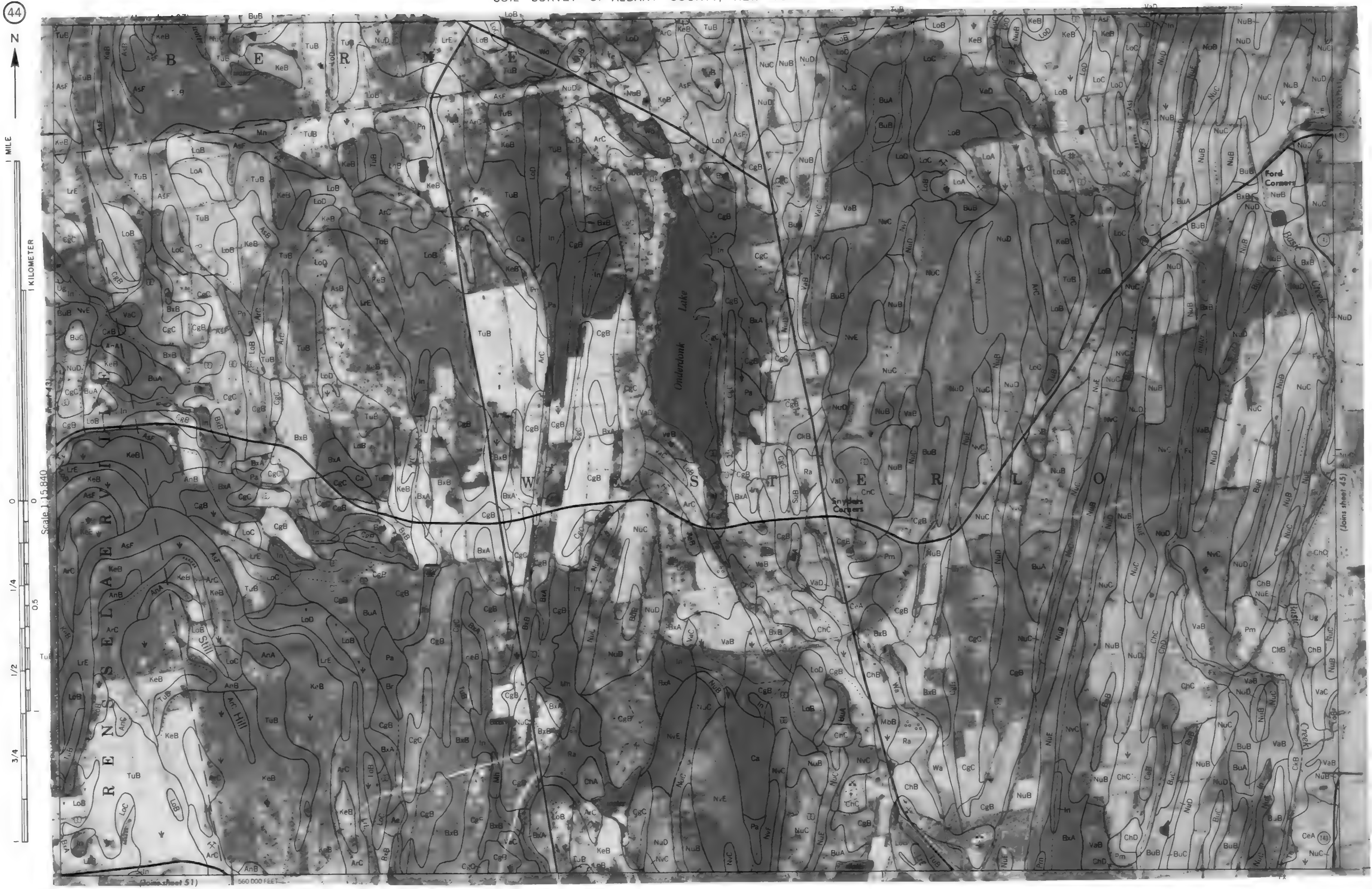

39
N
(Joins sheet 32)
(Joins sheet 38)
(Joins sheet 40)
NEW SCOTLAND
Clarksville
Onesquethaw Creek
Vly Creek Reservoir
Stony Hill
Bennett Hill
Tarrytown
Onesquethaw Creek
443
1 MILE
3/4
1/2
1/4
0
1 KILOMETER
0.5
0
Scale 1:15,840


40
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
0.5
1/2
3/4
1
(Joins sheet 33)
(Joins sheet 41)
(Joins sheet 47)
Feura Bush
South Albany Airport
NEW SCOTLAND
BETHLEHEM
Phillipin Kill
Vloman Kill
Onesquethaw Cr.
CONRAIL

SOIL SURVEY OF ALBANY COUNTY, NEW YORK — SHEET NUMBER 41

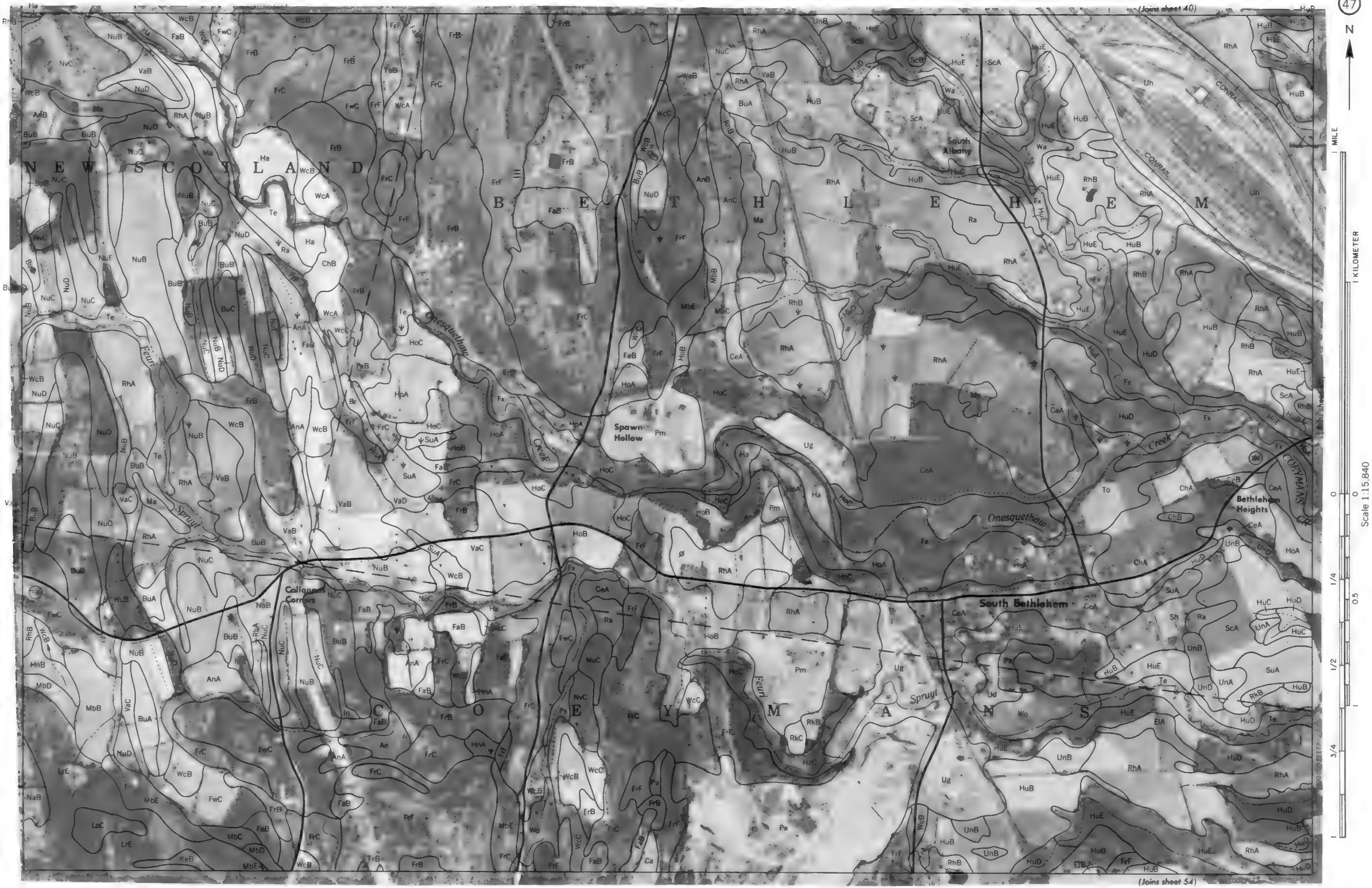

42
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
0.5
1/2
3/4
B E R N E
R E N S S E L A E R V I L L E
PARTRIDGE RUN GAME
MANAGEMENT AREA
Henry Hill
GARVER HILL
SCHOHARIE COUNTY
Triangle Lake
Crystal Lake
water


43
N
(Joins sheet 36)
(Joins sheet 42)
PARTRIDGE RUN GAME
MANAGEMENT AREA
PARTRIDGE RUN GAME
MANAGEMENT AREA
B E R N E
R E N S S E L A E R V I L L E
North Hill
Hicks Pond
Myosotis
Lake
Shoefelt
Corners
water
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0
0.5
1

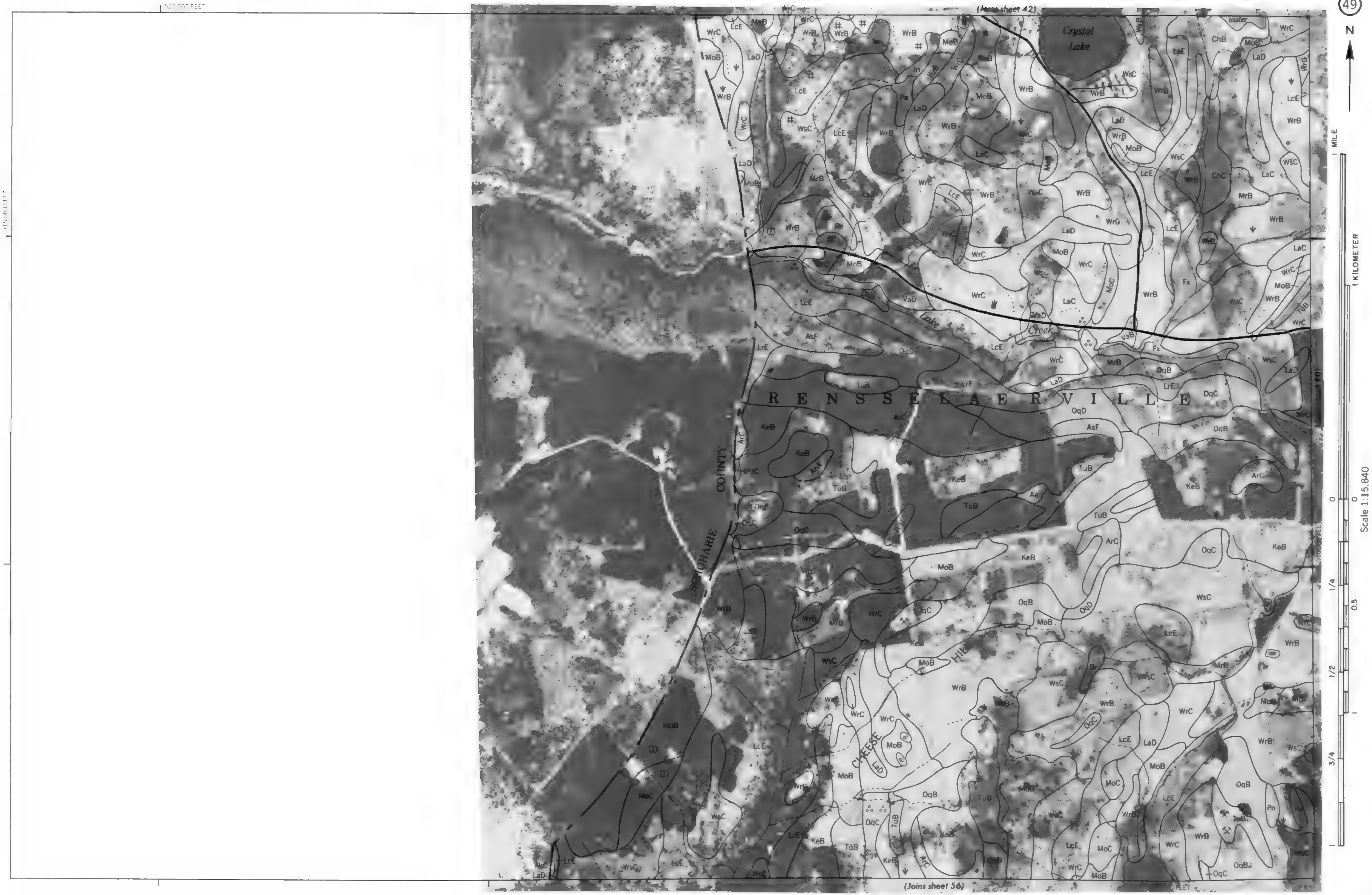

44
N
1 MILE
1 KILOMETER
Scale 1:15 840
Onderdonk Lake
Snyders Corners
Ford Corners
Still Hill
R E N S S E L A E R V I L L E
W E S T E R L O
(Joins sheet 45)
(Joins sheet 51)
560 000 FEET


45
N
(Joins sheet 38)
(Joins sheet 44)
(Joins sheet 46)
(Joins sheet 52)
NEW SCOTLAND
HELDERBERG MOUNTAINS
WESTERLO
Hannacrois
Hollow Creek
water
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
0.5

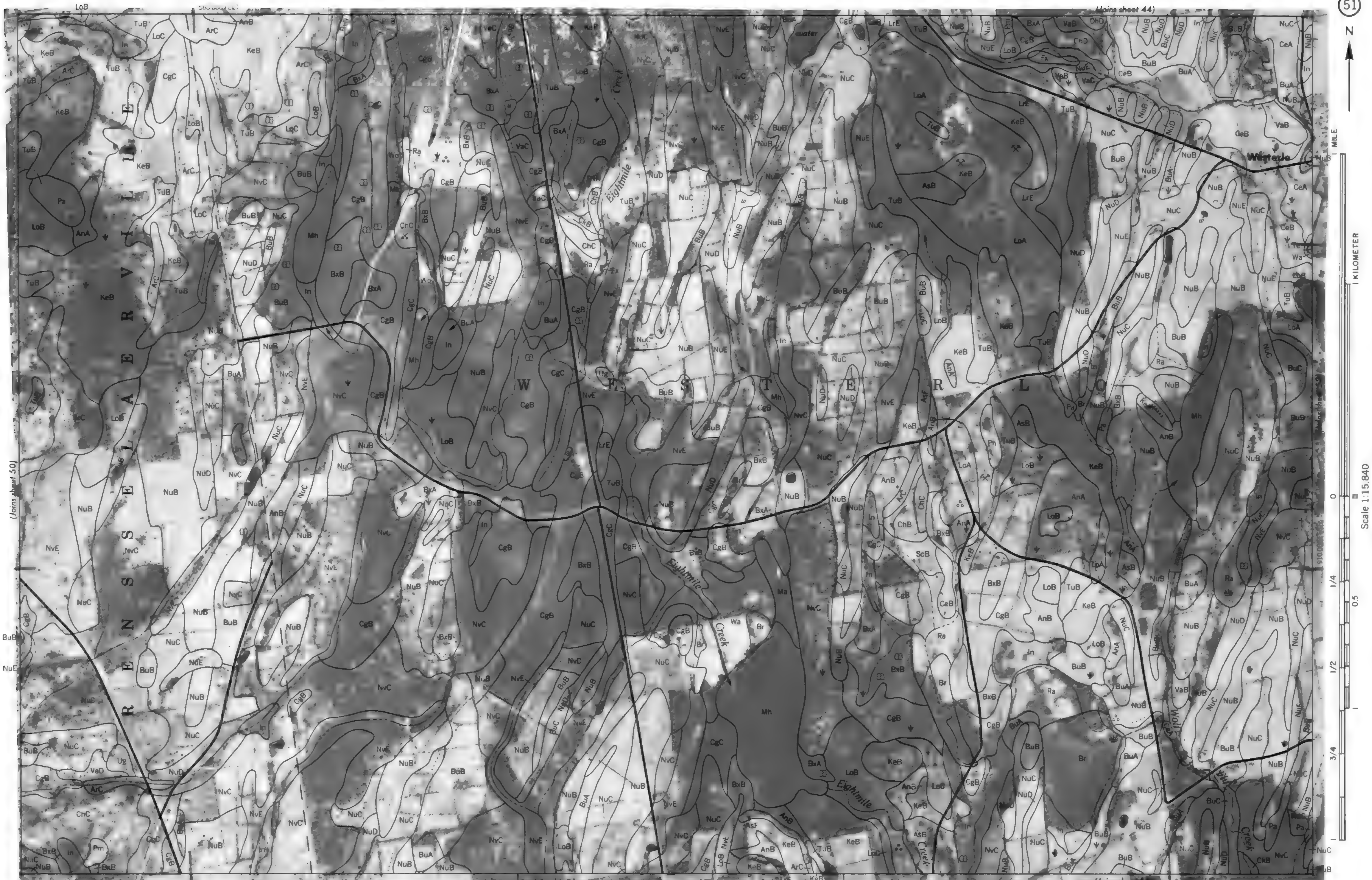

N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0
0.5
1
(Joins sheet 39)
(Joins sheet 45)
(Joins sheet 47)
NEW SCOTLAND
COEYMANS
Copeland Hill
Lawson Lake
Keeters Corners
HELDERBERG MOUNTAINS
WESTERLO
water


47
N
(Joins sheet 40)
(Joins sheet 54)
NEW SCOTLAND
BETHLEHEM
COEYMANS
South Albany
Spawn Hollow
Callanans Corners
South Bethlehem
Bethlehem Heights
Onesquethaw Creek
Onesquethaw
Feurt
Spruyt
CONRAIL
Coeymans Cr
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
0.5

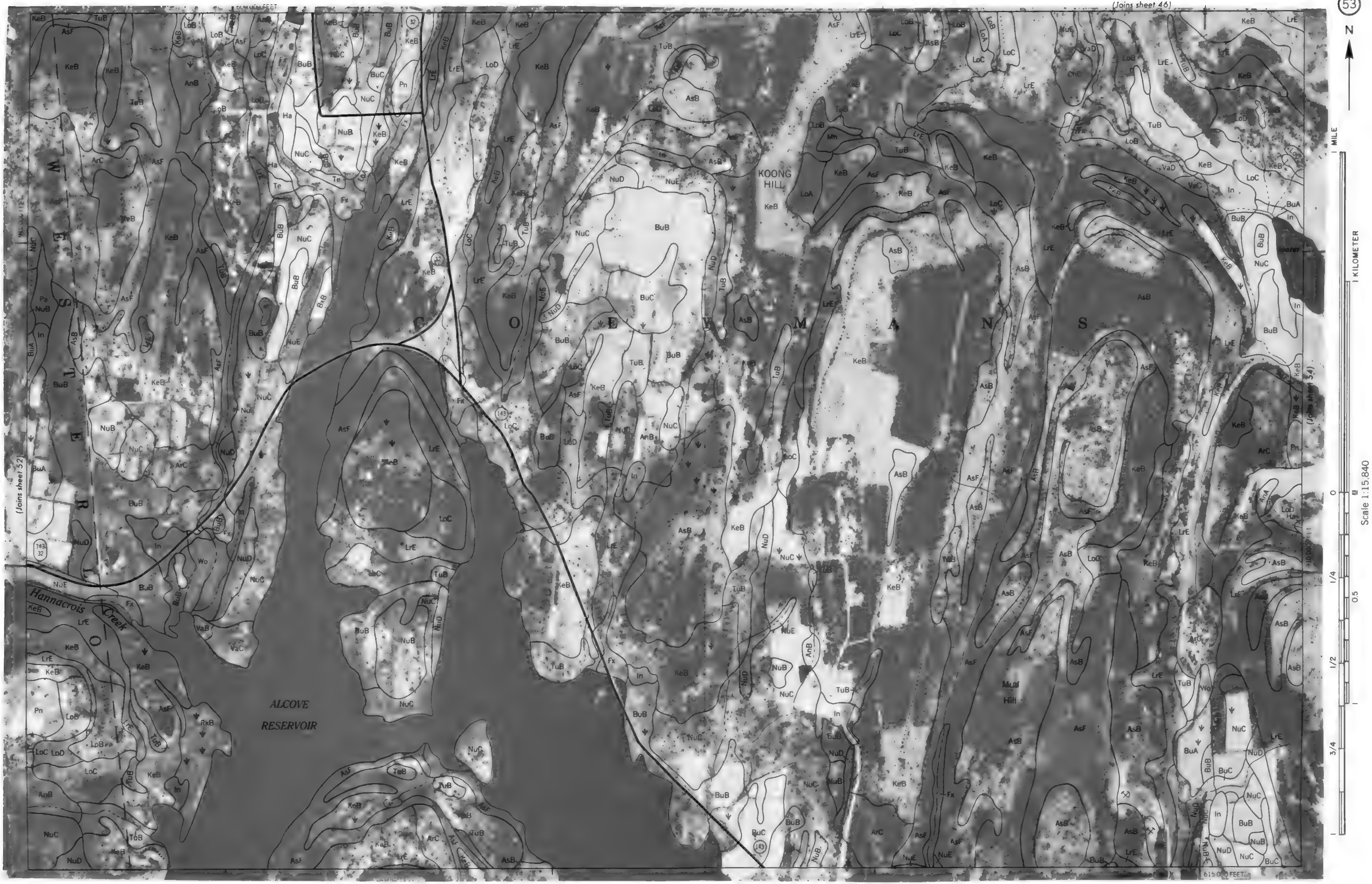
SOIL SURVEY OF ALBANY COUNTY, NEW YORK — SHEET NUMBER 48


49
N
(Joins sheet 42)
(Joins sheet 56)
Crystal Lake
Lake Creek
R E N S S E L A E R V I L L E
SCHOHARIE COUNTY
CHEESE HILL
MILE
KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
1
0.5


50
N
1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
Scale 1:15 840
Myosotis Lake
Rensselaerville
Rensselaerville Falls
R E N S S E L A E R V I L L E
Tenmile Creek
Fox Creek

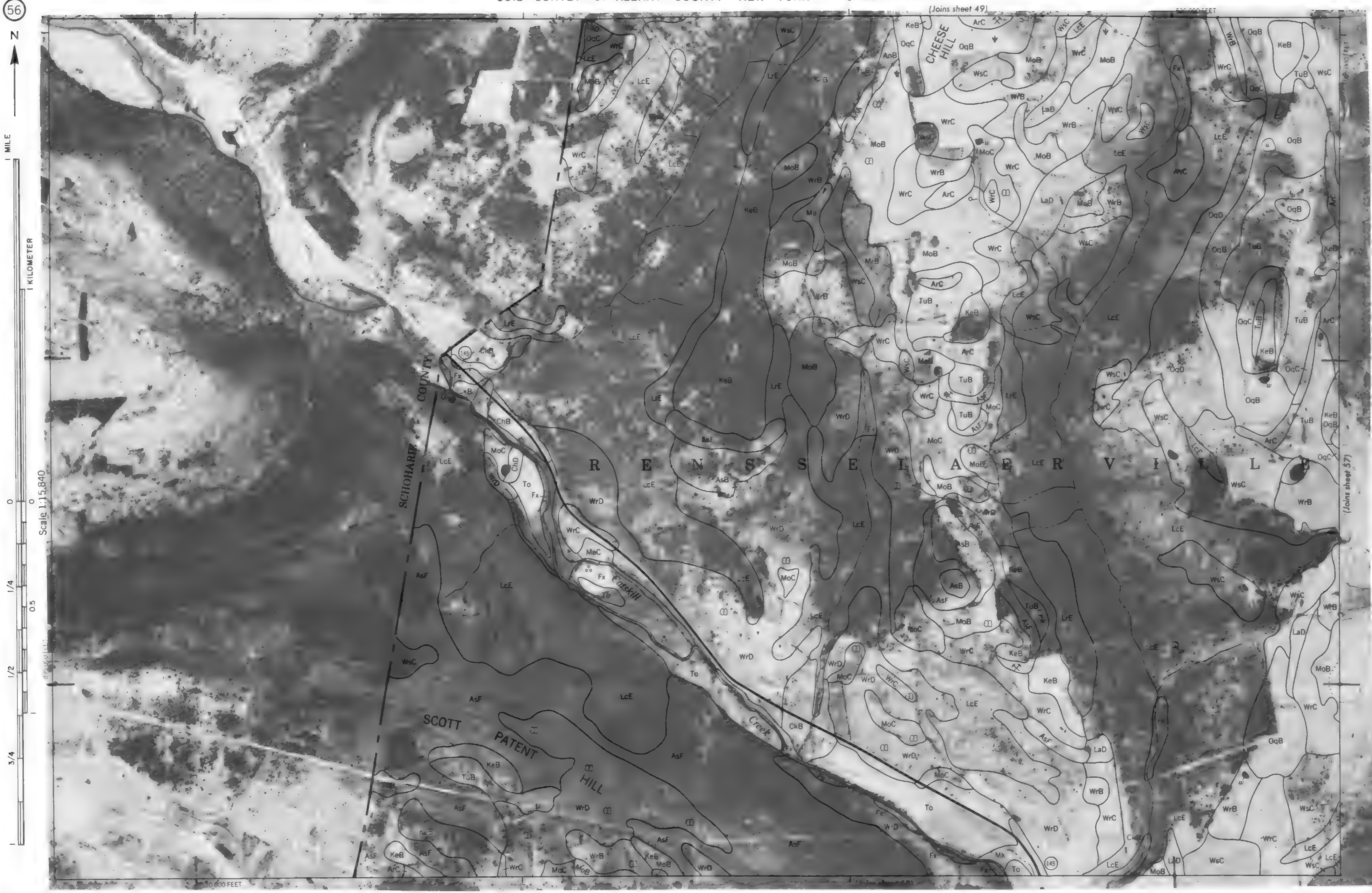

51
N
(Joins sheet 44)
(Joins sheet 50)
RENSSELAERVILLE
WESTERLO
Westerlo
Eightmile Creek
Eightmile
Creek
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
0.5


52
N
1 MILE
1 KILOMETER
Scale 1:15 840
Westerlo
W E S T E R L O
Dormansville
Basic Creek
Basic Creek Reservoir
Hannacrois Creek
Silver Creek
Creek


53
(Joins sheet 46)
(Joins sheet 52)
(Joins sheet 54)
N
KOONG HILL
ALCOVE RESERVOIR
Hannacrois Creek
Mud Hill
W E S T E R L O
C O E Y M A N S
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
0.5
615 000 FEET

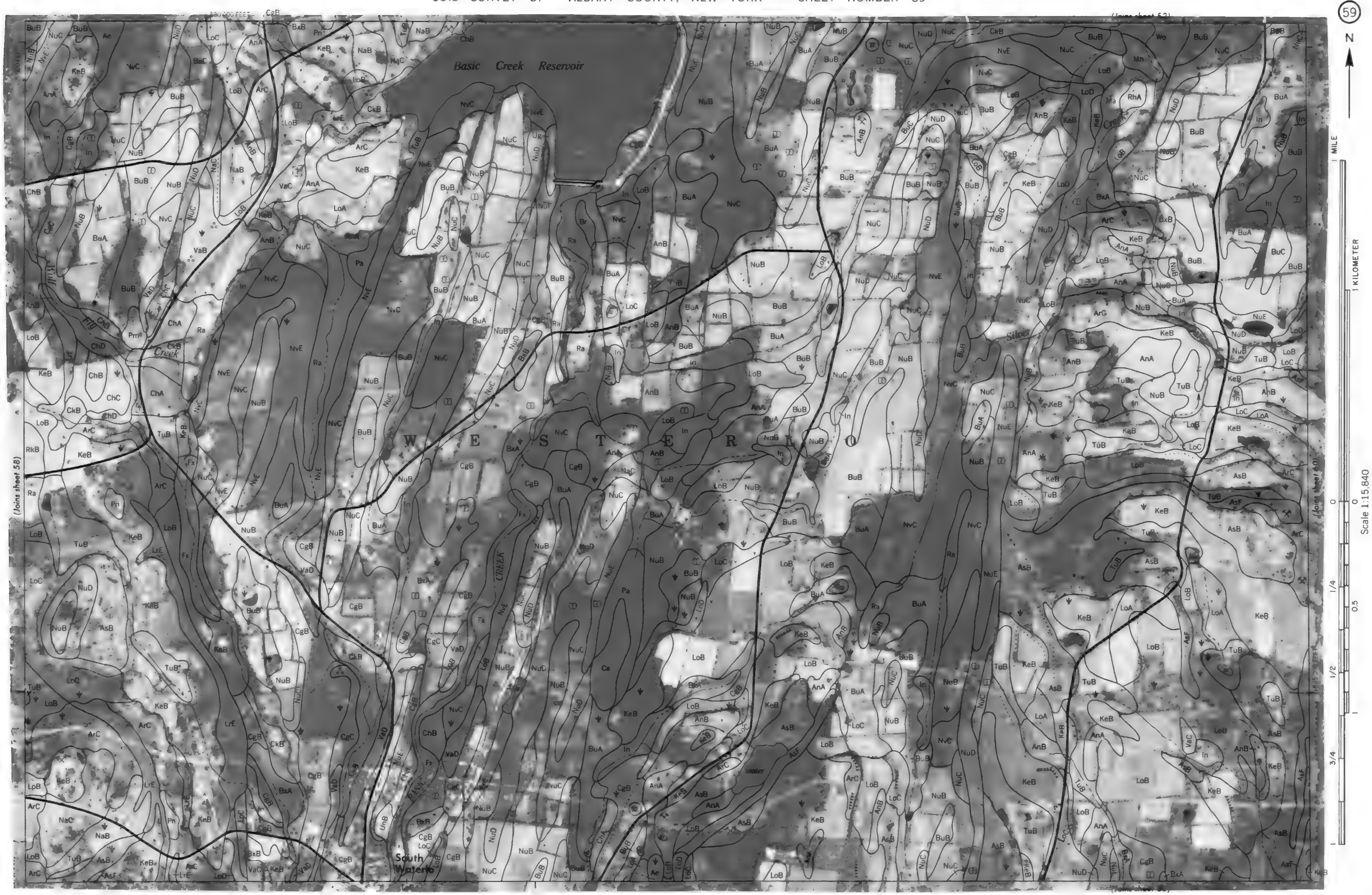

N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
0.5
1/2
3/4
1
BLODGET HILL
C O E Y M A N S
(Joins sheet 53)
(Joins sheet 55)

SOIL SURVEY OF ALBANY COUNTY, NEW YORK — SHEET NUMBER 55


56
N
(Joins sheet 49)
(Joins sheet 57)
CHEESE HILL
R E N S S E L A E R V I L L E
SCHOHARIE COUNTY
SCOTT PATENT HILL
Catskill Creek
Scale 1:15 840
1 MILE
1 KILOMETER
0
1/4
1/2
3/4
0.5
145


57
N
(Joins sheet 50)
(Joins sheet 56)
(Joins sheet 58)
905 000 FEET
540 000 FEET
R E N S S E L A E R V I L L E
SQUIRMER VALLEY
Fox Creek
Tenmile Creek
1 MILE
1 KILOMETER
Scale 1:15,840


58
N
1 MILE
1 KILOMETER
Scale 1:15 840
(Joins sheet 51)
(Joins sheet 52)
(Joins sheet 59)
(Joins sheet 65)
W E S T E R L O
R E N S S E L A E R V I L L E
Smiths Corner
Eightmile
Creek
Wolf
Creek


59
N
Basic Creek Reservoir
W E S T E R L O
South Westerlo
Creek
CREEK
(Joins sheet 58)
(Joins sheet 60)
1 MILE
1 KILOMETER
Scale 1:15,840
0
1/4
1/2
3/4
0.5

60


(Joins sheet 53)
(Joins sheet 59)
(Joins sheet 61)
ALCOVE RESERVOIR
ALCOVE RESERVOIR
COEYMANS
WESTERLO
Alcove
Hannacrois Creek
Gulf Creek
GREENE CO
N
1 MILE
1 KILOMETER
Scale 1:15 840

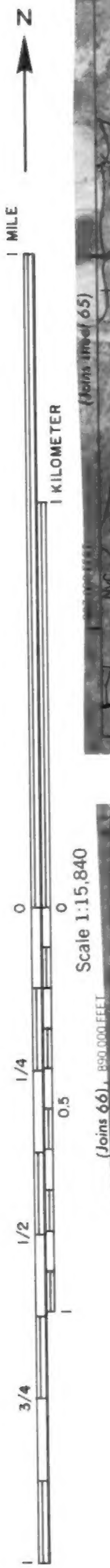

61
N
Coeymans Hollow
HANNACROIS CREEK
C O E Y M A N S
Aquetuck
GREENE COUNTY
(Joins sheet 54)
(Joins sheet 60)
(Joins sheet 62)
1 MILE
1 KILOMETER
Scale 1:15,840


62
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
1
0.5
(Joins sheet 55)
645 000 FEET
(Joins sheet 61)
C O E Y M A N S
COEYMANS
CREEK
Coeymans
RAVENA
CONRAIL
GOVERNOR THOMAS E. DEWEY THRUWAY
HANNACROIS
CREEK
HUDSON
RIVER
BARREN
ISLAND
COLUMBUS CO
GREENE COUNTY
(Joins sheet 21)
660 000 FEET
HUDSON
DELAWARE
LOWER
PATROON
ISLAND
RIVER
HUDSON
RENSSELAER COUNTY

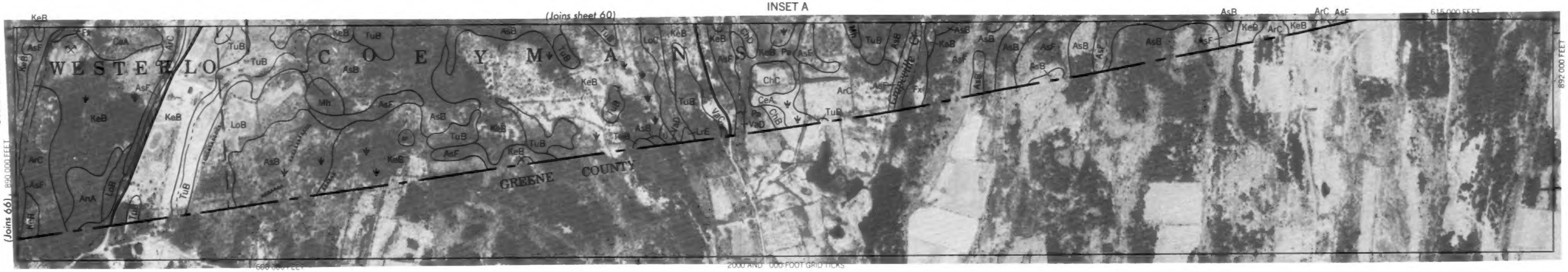

63
(Joins sheet 56)
(Joins sheet 64)
RENSSELAERVILLE
SCHOHARIE COUNTY
GREENE COUNTY
Preston Hollow
Potter Hollow
Cooksburg
Catskill Creek
Fox Creek
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
1/2
3/4
0.5


(Joins sheet 57)
N
1 MILE
1 KILOMETER
Scale 1:15 840
0
1/4
0.5
1/2
3/4
1
555 000 FEET
890 000 FEET
880 000 FEET
(Joins sheet 63)
(Joins sheet 65)
R E N S S E L A E R V I L L E
Medusa
Tenmile Creek
GREENE COUNTY
81


65
N
(Joins sheet 58)
RENSSELAERVILLE
WESTERLO
Lambs Corner
Eightmile
Creek
water
GREENE COUNTY
MILE
KILOMETER
0
1/4
1/2
3/4
1
0.5
Scale 1:15,840



INSET A



INSET B